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GLEANNINGS

A JOURNAL DEVOTED TO BEES, AND HONEY, AND HOME INTERESTS.

BEE CULTURE

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No. 9



MY WIFE is sorry for Thos. McDonald \$5.00 worth. Charge to my account.

ONE REASON for cleats on hives is to strengthen the thin and weak place left by the rabbet. Without the cleat it is easily split off.

BEESWAX from old combs will be much lighter if you first soak the combs several days, occasionally stirring and renewing the water.—*Le Rucher Belge.*

WM. H. EAGERTY must have misunderstood my plan of wetting sections, p. 308. Only the grooves are wet, the sections being packed solidly together, and there is no trouble about foundation falling down. But it's much better to have sections that don't need dampening.

"CRITICISM of the right kind, that which is fair and fearless, can do much good," says Hutchinson, so he's going to have a department of that kind, and he has a good man to run it, R. L. Taylor. If I had known about it I would have been more respectful to the Hon. R. L.

VENTILATION from between super and hive, p. 307, is in some respects an excellent thing. I used it for years, producing thousands of beautiful sections. But the bees are very slow to finish the row of sections next to the ventilation, so I, with no little regret, abandoned it. For extracting I suspect it beats blocking up.

"PROVE YOUR FAITH by your works," says a footnote, page 292, with reference to long-tongued bees. Why, bless your heart, aren't the works of friend Ritchey any proof? [I am glad if friend Ritchey has done something toward getting bees with longer tongues; but, doctor, why not prove your individual faith by your individual works?—Ed.]

HASTY is after you, Ernest, for your deliverance, p. 55. He says, "The eight-section holder shows no signs of turning up its toes in my apiary." Doesn't Doolittle also use it? With hybrid bees and proper management, Hasty thinks it's nonsense to say there's any trouble to get storing begun, when there's any thing to store. I had no trouble, no matter

what bees. [No; Doolittle uses a single-tier wide frame—the same he has always used. It was illustrated on page 803 last year.—Ed.]

M. A. GILL wants me to raise either the yield or the number of colonies I think "can be kept in a good location in Illinois," p. 303. But, friend Gill, I was talking about an average location, not a good one. I'd give a lot to believe I can keep 200 colonies profitably in one apiary. I'd like to know the facts. Friend Gill, give us the name of several who have kept 200 in one apiary in Illinois, and I'll be glad to revamp my answer.

A CYLINDER or a disk having a surface like a coarse rasp would be cheaper than one with sandpaper for a section-cleaner, for, instead of fresh sandpaper, you'd merely throw it in hot water. With motion sufficiently rapid the surface might be very coarse. [I am not sure, doctor, but there is something in your idea; but I am not sure, on the other hand, that it is so easy to dip the cylinder into hot water. A jet of steam might, perhaps, do just as well.—Ed.]

"I'D LIKE TO TRY IT," said my wife, with much interest when I read that item of E. D. Howell, p. 306, about canning fruit in honey. [I have been trying to persuade my wife to use honey more in our cookery. She has tried it in rice pudding, and I must say we think it is better, even including my better half. I have been wondering if any other thing would not taste better if sweetened with honey rather than sugar. Occasionally I use honey in possum cereal or caramel coffee, and I do not see why it is not every bit as good as sugar.—Ed.]

AN UNFAIR ADVANTAGE you take of me, Mr. Editor, p. 293. I said people believed a thing just because it was editorial, and then editorially you hint I don't know what I'm talking about, and I might as well have kept my mouth shut. Say, what'll you take to let me sign "Ed." to what I say whenever I want to knock you out? [Look here, doctor, you are an editor yourself. You help edit the *Bee Journal* and *GLEANNINGS*, and so I see no impropriety in your sticking on "Ed." whenever you like.—Ed.]

ANXIETY about foul brood in foundation ought to be set at rest, according to the report of Ontario Experiment Station. Foul-brood

germs were incorporated with wax which was barely melted and at once cooled and made into foundation. Full sheets of this were put into six colonies, but no sign of disease followed. [There can be no question on this point, although for my own purpose I should rather burn the combs, because I think it is cheaper than to try to save the wax. Diseased combs ought to be destroyed, or rendered aseptic at once. Actual burning does both.—ED.]

IT ISN'T RIGHT, according to A. I. Root, p. 317, "to be a party to even an *appearance* of untruth." That reminds me of the way Hasty, in *Review*, goes for Doolittle and E. R. Root for what they say on page 175. I esteem and love the two men named, but I want to say in all kindness that I believe if they'll look closely into the morality involved in that veneering business they'll both see that it's rotten, rotten, rotten. [I suspect you are right, doctor; but I do not see how you and the rest of the chaps put me on the same side of the fence with Doolittle. I supposed I was on the tiptop part of the fence—tried to get there, anyhow. Well, see my answer to articles by Whitney, Doolittle, and Thompson, in another column.—ED.]

"I LAY IT DOWN as a safe and imperative rule for kitchen use—*Never stand when you can do your work as well sitting*," says Marion Harland in *Common Sense in the Household*. The rule is just as good for bee-work as for kitchen use, and I thought of it when I looked at that picture on p. 299. Might just as well sit comfortably while scraping honey. [It is only fair to state that friend Boomhower's boys do use chairs in scraping sections. The photo that I took of them was an interior view, and rather indistinct; and our artist, in reproducing the picture, made the operator standing when he should be sitting. Yes, indeed, I believe most heartily in the rule that we should sit down at our work whenever a sitting posture will not interfere with the quantity and quality of the work.—ED.]

IN *Bulletin de la Somme* is gravely given a warning against American honey. "This deplorable honey, under the name of paraffine wax (!), is imported from the U. S., where it is made in Boston." "The combs, with their cells, are made by a machine, like foundation, with a mixture of very white paraffine, extracted from petroleum, and wax. The cells are filled with glucose perfumed with essence of clover and thyme; a hot iron delicately passed over the cells seals them," and there you are. Now, why don't the *Bulletin* send a pound to A. I. Root and get \$1000? [Tell your *Bulletin de la Somme*—what you call it?—that we have \$1000 waiting for them providing they can give *proof* of their assertions. You did not give us their full name and address, or we might write them, giving them a little "sass" back, properly peppered.—ED.]

JAMES CORMAC, p. 297, indorsed by a footnote, thinks a sudden stoppage of the honey-flow, where hives are raised on four blocks, might cause trouble "that would set the whole apiary wild on account of robbing." One

would naturally think so, but such is not the case. My hives remained blocked up till late last year, and seemed just as safe as if all let down. I think a three-frame nucleus would be safe blocked up an inch, *provided* there was no change in place or appearance. But on a sudden stoppage, hoist a hive or change its location and you'll have fun. [In that same footnote to which you refer, you will note that I did not believe myself that there would be any danger from robbing, *providing* colonies were strong enough. But your testimony is valuable in that it shows that bees become accustomed to large entrances, and will defend them, even after the honey-flow stops.—ED.]

I DON'T THINK stopping the sub-ventilator last winter made fire unnecessary. The winter was unusually mild, and, besides, a larger number of bees may have helped to keep up the heat. I think as much as ever of fire when the temperature is low. [Are you sure, doctor—real sure—that fire is absolutely necessary in your cellar under any circumstances? and do you know of any other person besides yourself who makes a practice of using fire in the cellar? and is it not true that some, knowing that you use fires, will put a stove in their own cellar, and make matters worse rather than better? Bees sometimes winter under what might seem to us to be very unfavorable conditions. Take, for instance, the good wintering in that dugout of Harry Lathrop's, in Wisconsin, where there are several inches of water in the bottom of the cellar. There are no sub-earth ventilators, neither is there a stove to create artificial ventilation or to raise or lower the temperature; and yet he says his bees wintered perfectly.—ED.]

A GENERAL FEELING seems to prevail that the bee-journals ought to warn us against shaky firms. But how, and be safe? Root and York say, tell on 'em and let us guess their names. Hutchinson says, tell their names and let us guess they're bad. If you know enough to make you suspicious, why under the sun can't you tell what you know? If I sell honey to a man and can't get my pay, is there any law in the land that will hurt me for telling the plain truth? [I suspect the fact of the matter is, doctor, it would not be wise to follow the York-Root policy invariably, nor the Hutchinson. Sometimes it may be advisable to tell about firms without giving their names, and sometimes it may be advisable to give the names and a mere inkling of the transaction. I have two cases right before me now. Two commission houses have failed to answer letters regarding consignments of honey shipped to them, notwithstanding the consignors have written them a number of times. The firms are reputable and honest. To publish their names, and give an inkling of the transactions, might be doing them a manifest injustice. I suspect that, when we get right down to the bottom of it, some clerk, to save his neck, has been pigeonholing the correspondence, or that one or two letters have been mislaid; but if there is a commission house that fails to answer letters, and

defends this kind of policy, I do not know but I should be tempted to give the name, and let bee-keepers draw their own conclusions. I tell you, doctor, if you could stand in the shoes of York, Hutchinson, and even of my own poor self, may be you would think that the policy we have all pursued is not far from what you would have carried out yourself. It is not always a question of whether we shall be sued for libel, but it is a question as to whether we might be doing some one an injustice.—ED.]



FACING COMB HONEY.

Doolittle's Position Scored.

BY W. M. WHITNEY.

Editor Gleanings:—I have just read an article from the pen of Mr. G. M. Doolittle, on page 174 of your journal, and to a portion of the same, under the head of "Facing Comb Honey," I desire to give a few moments' attention.

I have no objection to make to his manner of crating XXX honey, when the whole in the crate bears the test; but when he says, "And I also claim that there is nothing out of the way, if any one chooses to do so, in shipping cases of honey having XXX faces and XX or X honey inside, on commission. Yes, more: I claim that there would be nothing wrong in filling the center of the case with buckwheat honey, the same having XXX white-honey facing, providing it was shipped on commission, every case alike, and the producer thought it to his interest to do so. I should doubt the wisdom of such a course; but I can not see that such a thing would be dishonest."

Now, Mr. Editor, I have carefully read the above statement, wiped my spectacles, fearing I read it wrongly, or, rather, hoping I had, and read it over again. Now, I venture the assertion that neither Mr. Doolittle nor any other reputable bee-keeper would risk his reputation as an honest honey-producer by putting up his crop in that manner, even though he shipped it on commission. I can discover no difference between shipping to the consumer direct and to a commission house, so far as honesty of packing is concerned. There seems to be quite a strong desire on the part of many shippers to make the poor commission man a scape-goat for their sins; and, again, I fail to see what the fact, that "the producer thought it to his interest to do so" has to do with the honesty of the transaction. If a man may put up a crate of honey with XXX faces, and XX or X behind them, or buckwheat honey, he might any kind of honey, however poor, back of them; and, if he saw

fit, he could vary the combination behind the facing as he saw fit, whether he shipped one or a dozen cases, and be equally honest.

If the facing in a case is not to be taken as an index of what it contains, why should one case be used as a sample for any other?

The writer of the language quoted above says he has his sleeves rolled up; but I suppose from the context his arms were stripped for another kind of battle; but if they are yet bare he might as well leave them so, for mine are also stripped to the shoulder to meet him half way. Yes, I will go all the way to Borodino, and dare him into the middle of the road. Don't let anybody be afraid now; there will be no blood shed on the proposition of honesty of the bee-keeper who crates his honey in the manner above described, whether he ships direct to the consumer, or on commission.

I have read Mr. Snyder's article on "Facing Comb Honey," to which Mr. Doolittle refers; and, so far as it bears upon this subject, I indorse every word he says. The facing is put where it can be seen for a purpose, and not, as Mr. Editor says in footnote to article by Mr. Snyder, "unconsciously put to the front because it is so beautiful, and not for the purpose of deception." Now, that is entirely too charitable; or are these words sarcasm?

If a lot of poor stuff is put behind prime stock used as facing, no better evidence of intention to deceive could be presented, for it would convict the guilty party of an attempt to defraud, in any court in the country.

Why the glass front in the shipping-cases? To show the quality of the honey, of course. What else could it be for? It says, as plainly as words could express, "See what a nice case of honey." But Mr. D. says, "The commission man is supposed to open the case and show the honey." But suppose he does not do that. He also says, "He is to use judgment, and sell to the best advantage of the consignor." Then, most assuredly, he will not open the case if he suspects any "unconscious" putting to the front of "beautiful sections."

Scores—yes, hundreds of persons are unsuspecting enough to take the off-hand statements of the commission man; and, for any one of a dozen reasons which might be named, do not stop to examine minutely the goods purchased, but find later that they are the victims of a downright swindle. Now, who is the swindler—the commission man or the packer and shipper? But Mr. D. says, "The buyer should examine the honey." Very true; he should have done so; why? Because some people cheat in packing; he will be likely to do so next time; but does the fact that the buyer neglected to examine the goods change the culpability of the producer, and render him any the less dishonest?

Pray tell me how honey faced XXX and backed with XX or X is to be graded? Or will you, as Mr. D. says you can do in grading and marking honey, put a "secret mark in the handholes" or in some other sly place, "out of sight of any one except the one who is in the secret"?

Human nature is much the same, whether you find it in the honey-producer, the apple, peach, or berry grower; and if a man would face up his honey so as to deceive the unsuspecting he would face up his apple-barrel with prime stock, and fill in the center with wind-falls and culls; or he would "unconsciously" put the best peaches at the corners of the box or crate, where their "rosy cheeks" could be seen, you know; or he would just as "unconsciously" put scarlet gauze (he has an eye for the beautiful, you know) over a basket of miserably poor green peaches.

It is a mystery to me why he does not some time select a covering of blue; it's "beautiful," and some people admire the color much more than red; or why he does not some time select a facing of buckwheat or golden-rod honey. I've seen sections which were much more to be admired for color than the whitest sweet-clover honey I ever saw. But some people do such unaccountable things so *unconsciously* that they in time, I suppose, do them "unconsciously."

Now, suppose the commission man is dishonest, and that he has his "secret mark" given by the shipper, and that he intends to use his best judgment in selling "to the best advantage of the consignor." He purposely avoids opening the shipment, and while not guaranteeing the contents, yet he makes such representations as to make the sale, knowing, of course, what the quality of the contents is, by the "secret mark put where none but himself and the shipper" could readily discover it.

It is just such practices as this that have brought the producer and commission merchant into disgrace with consumers. Every honest man should put his heel upon every such transaction as he would upon the head of a viper, and assist in stamping out the whole disreputable business. To adopt the practice referred to, and carry it into every avenue of business, would make us a nation of cheats and swindlers. Perhaps some may think this pretty severe talk; but no milder terms can be used and state the truth; much more severe language might be properly applied.

There is more than one way to lie. We can lie fully as effectually by looks or actions as by words. If a case of honey faced with XXX sections does not tell you as plainly as any words could what the case contains, why is it faced at all? Thus facing honey, with poorer quality back of it, and putting up apples, peaches, or any thing else in a deceptive manner, is *lying*, pure and simple, and lying in a business transaction is dishonest. We should not charge our commission men with dishonest tricks, and at the same time place before them such object-lessons as the cases cited.

It has become quite too common for mankind, even in the more enlightened communities, to "consider it perfectly honest, if they felt it to be their interest to do so," to do that which they would not tolerate in others, without the least regard for the interests of the other fellow; and it is time the seal of condemnation were put on the whole business.

Now, Mr. Editor, I have not said a tithe of what I want to say, for I can cite scores of cases such as Mr. Snyder mentioned, which have come under my own observation; but I must close, for I have taken too much of your time and space already; but you are somewhat to blame. You invited us bee-keepers into the arena on this subject, and hoped it would be "aired a little." I hope it will not only be aired a little, but a good deal. I want to know whether bee-keepers in general take the same view expressed by Mr. Doolittle or not. If they do, then I stand alone; and, rather than join the crowd, I will brimstone my bees and go out of the business. I am sorry that you, in footnotes, apologetically assented to the false doctrine.

Garlo, O., March 15.

[As I have been on both sides of the fence, and didn't know which side I was then on, I wrote Doolittle to put on a footnote; that I would let him "have it out with him," and I would look on. Well, here I am on the top rail of the fence, looking on.—ED.]

DOOLITTLE'S REPLY.

Some years ago, at a certain bee convention, there was a certain commission merchant who exhibited two sections of partly unsealed buckwheat honey which he said he found, with many others of like sort, in cases which showed only clover honey from the "face" side, or glass front. He then went into a tirade of abuse regarding any bee-keeper who would do such a thing. Believing the bee-keeper who had sent the honey was present, I thought to draw out the commission man a little; so, after he had sat down I was granted the privilege of asking him a few questions, as follows:

"Did the bee-keeper of whom you received the honey sell it to you as A No. 1 clover honey?"

"No."

"Did he write you that it was all No. 1 clover honey?"

"No."

"Did he say any thing about the quality?"

"No."

"Is it not your business to sell whatever is consigned you to sell on commission?"

"Yes."

"Have you sold any of those cases you were speaking about as A No. 1 clover honey?"

"No."

"Will you tell us why?"

"Because it is my business to see what there is in any box, barrel, or basket, which is sent with no mark to show what it is, how it is packed, etc., so I can tell any customer (or show him if he requires) just what he is buying. Failing to do this, I am held responsible."

"Then you are *really* the salesman, and not the one who ships you the goods?"

"Yes, of course. Why did you ask that question?"

"Because you denounced the bee-keeper who sent you that honey, *without any mark*

as to what the case contained, as a fraud; and, from your own story, *you* would have been the fraud unless you sold the honey for such as it *proved* to be after you had opened it. Am I not right?"

He admitted that I was. This is as near as I can tell of a matter that happened some 20 years ago. When I *sell* a thing, stating it so and so, if I misrepresent, then I am "lying," as Mr. Whitney well says. But when I ship a thing on commission, the commission man does the *selling*, and sells the thing for what it *proves* to be, unless I tell him he need not open it, as I *guarantee* it to be so and so. In this last case he sells it on *my* guarantee, so is in no way responsible in the matter. So I repeat again, "that I see nothing *dishonest* in the matter of facing buckwheat honey with XXX clover honey, but doubt the advisability of doing so," for the reason that the retailer who bought a case of honey fixed that way would expect to get it for enough less to pay him for all sorting and trouble in the matter. If honey, not guaranteed to be of a certain quality (or apples, peaches, potatoes, etc.), is sold without any investigation regarding the matter (simply by the looks of the barrel, bale, box, case, etc.), then I must have been wrongly informed in these matters. Where no guarantee is made, the looks of any single article which is in sight speaks only for itself, not for what is out of sight; and the out-of-sight one says, "Here am I," when it bobs up; "sell me for what I am worth." I think this explanation will cause Mr. W. to roll down his sleeves and regret having waded through the mud all the way to Borodino unless he proves to be somewhat like little Eddie, who thought to vindicate himself thus:

A few evenings ago little Eddie, whose other name is not necessary to the purpose of this narrative, astonished his mother by informing her that he had met a bear while returning from the drugstore, whither he had been sent upon an errand.

"Why, Eddie!" exclaimed the astonished mother, "you know that isn't so. You didn't meet a bear."

"Yes, but I did," Eddie persisted.

"Eddie," said Mrs. Blank, "I am very sorry that you are so naughty. You know that it is wicked to tell such stories. This evening, when you say your prayers, you must ask God to forgive you."

Next morning Eddie presented himself at breakfast with a determined expression on his face; and when his mother asked him if he had prayed to be forgiven he replied:

"Yes, mamma; and God said he saw the same bear."

G. M. DOOLITTLE.

Borodino, N. Y.

[It is true I wrote Doolittle that I did not care to take a hand on either side of this discussion, and that I would leave him to have it out with friend Whitney; but since reading the cold print over two or three times—that is, that sentence taken from Doolittle—in Mr. Whitney's second paragraph—I have concluded that I had better come down off from that fence, and get on Whitney's side. The sec-

ond reading of the sentence or sentences in question seems "worse" than at first, and I don't believe friend Doolittle himself really intended to stand by what his own words really imply. It seems to me the point is right here: No matter whether the shipper says any thing about the contents of his cases of honey, and no matter whether he puts any trademark or grading on them, the general public would naturally assume that the *facing* of the cases was at least of the same kind of honey, and of very nearly the same grade (perhaps not quite) as that in the center.

While I acknowledge there is much truth in what Mr. Doolittle says above, yet the real question hinges on this: What do buyers expect? If it is the rule and not the exception to have buckwheat honey stuck into the center of cases having facings of white-clover comb honey, Doolittle's idea *may* be all right; but *if* it is a general rule in the trade that the center of the cases should be of the same kind, and very near the same quality, as the facing of the case, then Doolittle is *all wrong*. If I am any judge, the trade expects no buckwheat or other dark honey in the center of a case faced with nice white clover; therefore I am *ferminst* Doolittle, and with Snyder, Miller, Whitney, *et al*.

But here is something to the point.—Ed.]

FACING COMB HONEY NOT HONEST.

Is the "They all do it" a Good Rule?

BY F. L. THOMPSON.

An important feature of the discussion on "facing" comb honey has been recently overlooked; viz., to apply the "golden rule" and see how you come out. I bought a barrel of apples last winter. The commission man did not remove the top ones to show me the center of the barrel; indeed, I question whether that is often done in selling to a private customer. It would have suited me much better, when paying the money, to feel that a glance of the eye at the top of the barrel told me all I wanted to know about the whole barrel. There is no rule to tell me whether the central apples are only a little less choice than the upper ones, or greatly inferior; and the practice which leaves the customer in that uncertainty is, it seems to me, reprehensible.

Those who buy to sell again may approve, or even desire, this state of things. But I have generally heard *consumers* refer to the "facing" of fruit, potatoes, etc., in somewhat disgusted tones. I wonder why; for humorous effect, is it? I should say the practice is, on the face of it, of a piece with all the rest of that looking out for number one which makes the relation between buyer and seller such a hard, pitiless affair, which a person of any sensibility, forced to engage in mercantile life, must continually deplore. It is surely a mistake to suppose that those to whose interest it is to know the truth about what they want to purchase, at once, and thoroughly, can lend their sanction to the practice by "demanding"

it, as one writer in his zeal recently phrased it. The retail buyer is at the other end of the line from us; but he has rights, no less than the retail dealer and wholesale dealer. What the honest grocer thinks of the practice is well illustrated on page 83. But suppose we grant that many *grocers* "demand" faced honey, overlooking for the moment the superior rights of the retail buyer. (The writer referred to would apparently overlook them altogether.) What do those grocers want faced honey for? Display? If so, then of course they want the display to last as long as they have the honey. That means that the "facers" are sold last, and that means that the customers are tempted by the front sections, but get the rear ones—precisely the same effect that would be produced if that less worthy motive was kept in view in the first place. I know of one grocery where just that thing was done, and should not be surprised to learn that it was a common practice. Some will say, "If we don't do it, the grocers will." Page 83 shows that some grocers will not; and for the rest, if they want to have their comb honey faced, let them do it themselves. Let us keep our hands clean.

It is useless to argue that the customers are to look out for their own interests; that, as *nearly* all expect it, the rest must follow suit, or suffer for it. That most people expect sharp practice is no reason why it is perfectly right to satisfy their expectations. If I expect to be waylaid in passing through a back street, nevertheless no one is justified in actually taking my purse. A few, moreover, in their innocence, do not expect to be fleeced; so that, in their case, there is not even the shadow of an argument for the operation. What essential difference exists between the effects of *selling* and *buying* that which is for that which is not?

It may be said that the customer may always insist on having his pick of the lot. Theoretically this is so; but in practice either the honey-case is out of reach behind the counter, and the customer doesn't like to make trouble, or he is in a hurry, and doesn't want to bother, or is thinking about the rest of his order, etc.; so that I question whether in as many as half the cases the customer gets what he supposes he will, by a glance at the front of the honey-case. If this is true, what shall we say of the half who thus get left? Shall we say they *ought* to have looked out for their own interests? Sounds very fine; but just extend the principle to larger interests—bank deposits, for instance—and apply it to yourself instead of some one else, and see how you like it.

The head and front of the argument for facing is that it is customary—"they all do it." The rottenness of this excuse is apparent. I once asked the hired man of a neighbor why he always let the ditch water run into the reservoirs at night only. He replied it was in order to get ahead of the ditch company, which did not allow water to be used for reservoirs just then. I didn't say any thing. Apparently he interpreted my silence as disapproval, which it was), for he went on

to say that *everybody* did it; "and," said he, in just those words, "what *everybody* does is right." This is like the argument some one used for the L. frame—"To my mind, what is approved by the majority is worthy of approval." Now, "to my mind," a more worthless argument (considered logically only, overlooking the moral aspects), can hardly be imagined. Who are "the majority"? The incompetent, of course. Those who don't think, who follow their impulses, who are like sheep, all doing what one does. It is only the few who think. "The majority is *always* wrong," says a character in a drama of Ibsen's. A French lawyer, being applauded by the crowd, asked, "What foolish utterance have I been guilty of?" The only "majority" argument worth considering is the majority of the competent—which is but seldom equivalent to "the majority of all," and certainly not in questions of universal justice, like the one under consideration. Breadth and charity are not yet at the bidding of the mob.

It seems to be implied that, if the customer is not verbally informed that the honey is uniform, when it is not, one's conscience may be free. That reminds me of the man who excused himself for putting a traveler on the wrong road by affirming that he did not *say* it was the right one, but just pointed it out with his thumb.

Finally, we are told that, if intentional deception is not used, the practice is all right. Just what do we imply, I should like to ask, by the common phrase "wrong actions"? Is it not that an action may be intrinsically unjustifiable, irrespective of the agent? We are not now discussing persons. We are arguing whether a certain practice will or will not have evil effects. If it does, it does not necessarily follow that the person responsible for it is dishonest. He may be mistaken; although, if we did not know the man, we should think it *likely* he was dishonest. But that is a side issue, not the main point. Why should we assume that, if some *think* they are right, they *are* right? A pretty pickle society would be in by consistently adopting that principle.

My practice is to first grade the honey, then pack it, entirely regardless of "faces," but taking the sections just as they come, except that occasionally, when an uncommonly good-looking side of a section happens to be turned out in front, I take the pains to turn it in again, so as to be sure not to give the wrong impression. By this means a glance at the front tells the whole story. I consider that method the only honest one. Mr. Snyder's attitude is just right.

Montrose, Col.

[Now, then, it seems to me we have taken a good deal of space on this question, and we had better draw the discussion to a close—that is, unless Mr. Doolittle cares to have something more to say. He is as honest as any man in our ranks, and would not be a party to any scheme that would favor deception in a business transaction.—ED.]

SECTION-CLEANING MACHINES.

A Discussion of the Various Principles Involved.

BY J. E. CRANE.

Editor Gleanings:—I thought I ought to sit down this morning and have a plain talk with you about the forthcoming section-cleaning machine. Four or five illustrations have appeared in our bee-journals, and I fear none are of much practical value except for the new plain sections. But as perhaps ninety-nine out of every one hundred sections made are of the old style, with wide sides and narrow top and bottom, the cleaning-machines so far illustrated do not promise much help except in polishing the outsides, unless it be Mr. Golden's band or belted cleaner; and even this, it seems to me, has some serious objections.

To begin with, the use of sandpaper to clean propolis seems objectionable in that it is likely to gum up quickly. Although this has been suggested two or three times in our journals, I have so far seen nothing in print from those who have used these machines, pro or con.

As it is propolis we want to get rid of first of all, it would seem a most important question whether sandpaper will answer for this purpose or not; so I wrote to Mr. Aspinwall some time last month. In his reply he says, "Sandpaper is of no use. It will gum in cleaning 20 or 30 sections, and must be glued, otherwise any breakage will injure the comb honey. Emery cloth needs no gluing, but will gum the same." I will not quote more, as he has prepared a paper on this subject for the *March Review*, and I do not wish to steal his thunder.

For cleaning or polishing the sections after the propolis is largely removed, or for sections quite free from this sticky product of the bees, especially the outsides of sections, nothing would seem to be better than a sandpaper disk. Sandpaper is used very extensively in wood-factories in this way; but for cleaning the edges of sections it will be seen at once that the disk will not come within an eighth of an inch of the edge of top and bottom of the old-style sections; and you may remember that, with the sections with sides wider than top and bottom, we usually get the most propolis on the edges of top and bottom pieces, and on the inside edges of the sides. I fear it will not save much time if we have to go over and clean these edges with a knife after we have used a machine. Mr. Aspinwall's roll, as illustrated, does not look as though it could be made to do quite a clean job on the old-style sections.

There seems to me another objection to the sandpaper disk for cleaning the edges of the plain sections, even if we were sure it would not gum up. I find the space in old-style sections between the comb (when filled and capped) and separator is just $\frac{1}{8}$ of an inch. In the new cleated separator the cleats are $\frac{3}{16}$ of an inch thick; and if we take $\frac{2}{16}$ from $\frac{3}{16}$ of an inch it will leave just $\frac{1}{16}$ of an inch as the space between the face of the comb and the edges of the sections; or, to put it more simply, the sandpaper disk comes within $\frac{1}{16}$ of an

inch of the face of the comb. Now, suppose the disk tears off a piece of propolis $\frac{1}{16}$ inch thick (I frequently find pieces $\frac{1}{8}$ thick), what will become of it? Why, it will be driven by the disk into the honey, or rolled over its surface and mar it. Or suppose it grinds the propolis to powder, it will then, with the powdered wood, stick to the disk, or else much of it be lodged against the face of the comb; and if the weather is warm it will be likely to stick there. The same difficulty would come from the use of a broad belt. If we must have the propolis I should much prefer to have it on the edges of the section to the face of the comb.

But perhaps my fears are imaginary. At most I claim them only as theoretical. It will, however, be noticed that a revolving cylinder will, by its motion, throw all propolis and dust, that do not stick to it, away from the comb, which is one point in its favor.

To have a cleaning-machine that would be entirely satisfactory we should like one that we could pile the sections into by the clampful, like golden sheaves of grain into a thrashing-machine, and have our sections come out at the other end all free from propolis, and polished to a turn; yes, and graded into three piles—Fancy, No. 1, and Seconds. But this is not likely to be.

But what are we to save in time by a section-cleaner, any way? How many sections will or should a good machine clean an hour, or day or ten hours? Another question comes in right here: How many sections, as they run, will a man or woman clean in a day? Mr. Aspinwall says in *Review* that he could clean twice as fast with his machine as by hand. How fast does he clean by hand? I found last season I could average just about 1000 in ten hours, and clean my clamps; and yet my right-hand man, who had no previous experience, could not clean more than 500, although much stronger than I am, and a very active man, and he called it the hardest work of the season. An aching shoulder for some weeks after I got through cleaning led me to think I had worked harder than was wise.

If a cleaning-machine will not clean any faster, it seems as though one might do it much easier and better, which would be a great gain.

I have certainly been much interested in this subject, and have given it considerable thought, and carefully studied every thing I could find on this subject. The greatest difficulty seems to be that any thing now proposed that will do the work well will gum up or will not reach all the propolis. If a solid cylinder of emery, such as Mr. Aspinwall illustrated in the *Review* (it looks like solid emery), will not clog up too quickly with propolis, or if it can be cleaned quickly, it would, if of the right shape, do the work, it seems to me, very effectively. I send you illustration of such a roll or cylinder of such shape as to clean the edges of old-style sections.

That we might have something that would scrape off the gum, and not clog, I have thought of a cylindrical spring wire brush. The motion of the wires would likely clean

them; or if not, then turn them in an opposite direction against a piece of board, and the propolis would get off, I think.

Another way to remove the propolis would be to use a cylinder with knives set so as to wind around it like the threads of a screw, except at the ends, where they should be at right angles with the length of the cylinder. Such a scraper (for, indeed, it would scrape just as we scrape with a knife) would not be likely to clog; or, if it did, it could be easily cleaned with the point of a knife while revolving very slowly.

Another form of the same method would be with knives set diagonally to the axis of the cylinder, with thin blocks between, and all bolted firmly together. I am not sure but nearly all of this last form could be made of wood, except the knives and bolts. It would have the advantage of the knife passing over a given space twice in every revolution. Whether such cylinders can be furnished at a price that could be afforded by bee keepers, I am not able to say at this time.

It seems to me now that we are not likely to get any one thing that will do our work best; but with one to take off the bulk of propolis, and another a disk or emery cylinder or sandpaper belt to polish and finish up, it looks hopeful. Some sections will need but one, while others will need a good vigorous application of both.

I am making this paper quite too long; but I just want to say that, if you or your expert mechanics at Rootville, or your correspondents, will criticise my ideas as freely as I have those before me, and propose something better, no one will be more pleased than myself. The season is opening, and there should be a thoroughly practical machine on the market by July 15th, if possible.

Middlebury, Vt., Mar. 10.

Later.—I have delayed sending the above, that I might have an opportunity to test some of my theories; so I made a roll after the last one described, but using sheet-iron plates instead of steel, and attached to a Barnes-saw belt, when, presto! it cleaned off the propolis, but not as fast as I liked, and then I filed teeth in the edges of my iron plates, when it took hold, tearing off the propolis, and wood too, if I was not careful. Well, it did the work, but very roughly; but it was a rough tool. It proved very conclusively, however, that making machinery was not my forte.

From my experiment I am of the opinion that such a roll well made would do most excellent work; but it needs a roll that will not bend and twist out of shape as mine did. There appeared to be no trouble with clogging.
Apr. 5. J. E. C.

[I have nothing special to criticise except in one point; namely, where friend Crane says that he finds "the space in old-style sections between the comb when filled and capped, and the separator, is just $\frac{3}{16}$ inch." I feel quite sure he has made an error here. I have measured the distance in something like a hundred different section boxes. Some of the sections were produced in Colorado, some

in California, some in New York, some in Ohio (our own), and some nobody knows where (I didn't find any from Vermont). I picked the sections up at random, and measured them. Where *separators* were used I did not find a single one where the space between them and the cappings was only $\frac{3}{16}$ of an inch. The great majority had just an even $\frac{1}{4}$ inch. I found some that had a space even of $\frac{5}{16}$, and a very few that ran about $\frac{1}{64}$ under the $\frac{1}{4}$ -inch space.

A few weeks ago, R. C. Aikin, of Colorado, sent us a few of his supers (to illustrate another experiment) just as they came from the hive. These are in our office now, and supers are literally crammed full of honey, so that faces of the combs above the separator in the many instances are bulged out; but in no instance did I find a section in this lot where the capping of the comb was less than $\frac{1}{4}$ inch from the separator. As it was evident that the bees were greatly crowded, that would probably reduce the bee-space to a minimum.

In an article elsewhere in this issue Dr. Miller says a comb in a $1\frac{1}{8}$ wide section will average $1\frac{3}{8}$ inches thick. This allows the $\frac{1}{4}$ inch between the face of the comb and the separator just as I find it to be from my own measurement.

Now, then, I deduce from all this that the average bee-space between the separator and the capping of the comb is $\frac{1}{4}$ inch; and if we take off $\frac{3}{16}$ we shall have $\frac{1}{16}$ -inch space left, or $\frac{3}{16}$ between the faces of two combs in plain sections when they are put into the shipping-case, providing separator stuff is not slipped between.

His points are all well taken in regard to sandpapering - devices for cleaning sections. Partly from my own limited experience and partly from reports, I have come to the conclusion that it is almost absolutely necessary to have high speed. The revolving disk should travel, *perhaps*, as fast as a buzz-saw, which is about 3500; and the mandrel used by L. A. Aspinwall, made of emery, probably travels not much less than 3000. I feel sure, as Mr. Crane does, that something will be evolved somewhere or somehow between a set of scraping-knives and sandpaper. He, so far as I know, was the first to suggest scraping-knives on the plan he describes; and if the idea is worthy of a patent he ought by right to have the first chance at it.—Ed.]

DRAWN-OUT COMBS.

Does Honey Ripen in Thin Combs Quicker than in Thicker Ones? B. Taylor's Method of Comb-leveling; a General Discussion
sion of the Whole Question.

BY DR. C. C. MILLER.

One who has paid any attention to the matter must know that there is great difference of opinion as to using sections containing comb drawn out more or less the previous season. Some say it's a gain of dollars to use them; some say it's a loss. Some say they must be leveled down if the cells exceed $\frac{1}{4}$ inch in

depth; others say, the deeper the better. As dollars and cents are involved, I'd like to know where the truth lies. I confess that I don't know whether I know for certain. I believe there is a financial gain in having cells drawn out, whether done by the bees or machinery, and that the deeper the better so long as they are perfectly clean and not deeper than we want the finished product. And yet it is possible that there may be something I haven't watched close enough—something I don't understand clearly enough; and if I'm wrong I want to be righted; for I don't believe that I'm so stubborn in opinion as not to change if holding on to an opinion is going to lose money for me. If I'm right, then those who disagree are losing money, and should be glad to change. So let me say how the matter looks to me; and if there's anything wrong in my views, please show it to me.

I start on the assumption that extracted honey may be as good in quality as that contained in the cells of the best section honey; and yet there's a possibility I'm wrong in that. For years I have used many sections that had been drawn out previously, and have always supposed I got nice finished sections from them. But others say they have done the same thing, and the product was bad. In the *American Bee Journal* for Nov. 18, 1897, the question was asked as to the quality of the honey in such sections, and opinions varied. A number had had no experience "along that line;" a number had tried them and had found no objection. R. L. Taylor thought they were not capped so well nor so quickly; not so fine in appearance as to color, and perhaps inclined to granulate and ferment. E. T. Abbott always secured a poorer quality of honey. J. A. Green found a liability to granulation and fermentation, along with other objections. W. McEvoy found leveled-down combs always filled and finished sooner; but he doesn't like the flavor quite so well.

The question comes, Have these four men been more observing than the larger number who had found no objection? or was there a difference in circumstances to account for a difference in results? Mr. Taylor mentions an objection that has also been given by others: The bees are slower to fill and cap unfinished sections. However this may be with Mr. Taylor, one of the things I know, and know to a dead certainty, is that such is not universally the case. I have had a somewhat extensive experience in years of failure, and have had hundreds of cases in which the one unfinished section in the super was filled and sealed, and the remaining sections with foundation were left untouched. Again, in years of plenty I have always found the bait section filled and sealed first.

I don't know, but I suspect that this difference of experience comes from different conditions. Take an unfinished section this fall from a hive, extract it, and don't let the bees touch it till next spring, or leave it without extracting till spring, and I think such a section will have granules left in it that will make the bees a little slow about using it, and will affect the quality of the honey stored in

it. Let that same section be given to the bees to clean up before there's any possible chance for granulation, letting it be where the bees think they are *robbing* it, so that they will clean out the least and last remains of the honey, and I think you will find, as I have done, that it will be filled and finished sooner than a section with foundation.

But among those who favor using drawn comb, or drawn foundation either, there is a marked difference of opinion as to the proper depth to which the cells should be drawn out. B. Taylor has been quoted as using his excellent "Handy" leveler for the sake of reducing the depth of the cells. I don't believe he ever used it for that purpose on a perfectly clean section, and have asked for proof. No one has ever brought forward the proof. On the page already quoted in *American Bee Journal*, the question is also asked how thick the comb should "be after being leveled down *a la* the late B. Taylor." The answers vary from $\frac{1}{2}$ inch to full thickness.

In *American Bee Journal* for Jan. 27, 1898, several of the repliers go into details somewhat, giving a reason for their belief. It may be interesting to refer to these, keeping in mind that the thickness of a sealed comb in a $1\frac{1}{2}$ section with separators will be about $1\frac{3}{4}$. And I may say right here that this matter is of sufficient importance to give it a good deal of attention; for if we who are using deep cells are losing by it we ought to find it out; and if others are wasting by cutting down unnecessarily, then they ought to stop the waste. Besides, if drawn foundation is to be used it is important to know what is the best depth, providing it makes no difference to the machinery.

One reason given for having cells not more than $\frac{1}{4}$ inch deep is that, when deeper, the comb is tough. If there is any difference, ought not the part of the comb last made be the most tender? Then why cut away that, leaving the toughest part? Another is that, with cells more than $\frac{1}{4}$ inch deep, the honey is not as thick and of as nice quality. If that be true, it is reasonable to gauge the thickness and quality of the honey by the depth of the cell. A cell $\frac{1}{2}$ inch deep will not give as nice honey as one $\frac{3}{8}$ deep; a cell $\frac{3}{8}$ deep will be excelled by one $\frac{1}{4}$ deep; this in its turn is not so good as one $\frac{1}{8}$ deep. I don't say it isn't possible there may be something in the matter of depth; but if it is true that a cell $\frac{3}{8}$ or $\frac{1}{4}$ deep is better than a deeper one just because of its depth, I don't for the life of me see how it is possible to get away from the logical conclusion that, the greater the depth, the poorer the honey; and, the less the depth the better the honey, the best honey of all being that produced on the Michigan no-wall foundation.

The same reason also applies to another objection, that honey sours in cells more than $\frac{1}{4}$ deep. If it sours at $\frac{3}{8}$ deep, there certainly must be a little tendency that way if cells are only $\frac{1}{4}$.

Another item is, that combs are rough and unsightly, so the cells must be cut down to $\frac{1}{4}$ in depth. Now, suppose a cell is $\frac{3}{8}$ deep. I

cut away $\frac{1}{4}$ inch, leaving it $\frac{3}{8}$ deep, and you say, "Oh! you must cut away another $\frac{1}{8}$ and make them build that $\frac{1}{8}$ over again or else they'll finish it rough." That may be reasonable, but it doesn't look so at the present writing.

I have often wondered how it is that combs of full depth could be used for extracted honey, while the honey would sour, and all sorts of things, if it were left in the comb. Mr. Demaree refers to the matter, and says conditions are different. "The bees instinctively spread out the honey in the extracting-combs, and thereby aid in the evaporation of the excess of water in the nectar; while in the section-cases the work is more concentrated, and the drawn-out combs are sometimes filled and sealed before the nectar is thoroughly seasoned." Surely the bees don't know whether the drawn-out combs are intended for comb honey or the extractor; and the only difference would be the greater amount of room in one case than the other. But is it the rule that honey in extracting-combs is more liable to spoil if the room be limited? and just as much room can be given in section-supers as in extracting-supers.

I am inclined to believe that Messrs. Larrabee and Doolittle have more nearly the correct view. Mr. Larrabee wants just enough cut away so the bees will finish out with white wax and cover up combs that are stained, although there might be some question how much stain could be allowed, even if covered up. Mr. Doolittle says, "There is only one reason for a comb-leveler, and that is to get rid of the thick edges to the cells (which generally are of a dingy-colored wax), so that the bees will lengthen out the cells with new wax the next year, thus completing the combs so that they will look equal to those built out entirely new from the foundation. . . . As I use sections whose combs are only $1\frac{1}{8}$ thick, it is necessary to level them down to about one inch to accomplish what I wish. If I used two-inch sections then I would leave the combs, after leveling, about $1\frac{1}{2}$ inches." Barring a slight inconsistency in his figures, I believe Doolittle's head is, as usual, level; and if there's any leak in his logic or mine, I'd be glad to have it pointed out.

Marengo, Ill., Feb. 11.

[I have spent a little time in looking up the late B. Taylor's articles, but I do not anywhere find that he gave a distinct reason *why* he leveled his combs. He seems to have left it to his readers to infer that it was for the purpose of getting rid of the thickened and soiled edges of combs as bees leave them before the capping is put over; and, incidentally, I believe he made the point that honey would ripen better in shallow cells than in the deep-er ones.

When this question came up a few years ago a good many reported that it was not profitable to use unfinished sections, because the honey was more apt to candy; and that, even after they were completed, they did not look as nice and clean as those built from foundation; but at the same time the idea of leveling

down the combs, *a la* Taylor, was not, of course, taken into consideration; but since that time there seems to have been a general testimony to the effect that such leveled combs are not only readily accepted and filled by the bees, hence finished sooner, but in appearance are fully equal to those built from foundation.

When the use of unfinished sections was condemned in the first place, it is possibly and probably true that they were not first extracted; or, if extracted, they had not been given to the bees to clean out.

Later on, Mr. Taylor brought forward the statement that he considered unfinished sections his most valuable stock in trade for the following year. He extracted them, and then left them exposed where the bees could clean the honey out. They were then leveled down, put into supers, ready for next year's business. If I remember correctly, he claimed that such a procedure increased his honey crop by almost a half.—ED.]

THAT LONG-IDEA HIVE AS POPPLETON USES IT.

The Advantages of Single-story Hives Over the "Doubled-eckers."

Mr. O. O. Poppleton:—Having Mr. Doolittle's "History of the Long-idea Hive," GLEANINGS, page 634, and your reply, page 13, I have become somewhat interested to know more of the particulars regarding said hive. What size is your hive, inside measure? What size is your frame? Where do you form the entrance, at side or end? Do you use a loose hive bottom? What are the most important advantages over the top super hive? Is it necessary, in this hive, to use excluders between the brood-chamber proper, and the surplus compartments? D. W. HEISE.

Bethesda, Ont.

[Mr. Poppleton replies to the above as follows:—ED.]

The hive I use is 36 in. long, $13\frac{1}{4}$ wide, 13 deep, inside measures. Frames are—top-bars, 14 in.; side or end-bars, 12 in.; comb-guide, $12\frac{1}{2}$ in., and bottom-bar $13\frac{1}{8}$, the last projecting about $\frac{1}{4}$ in. outside of side-bars. (See article on p. 517, GLEANINGS for July, 1897.) Entrance is in the middle of the long side of the hive. I use a tight bottom. This is more necessary with me than with many, on account of my practicing migratory bee-keeping. The principal advantage to me is that, with my physique and temperament, I can do better work with single-story hives than I can with double-decked ones. Our Creator has made us differ from each other in qualities of both body and mind, and our success very often depends somewhat on our adoption of such methods and implements as are best suited to us. There are advantages and disadvantages in both kinds of hives. With the single-story hives I can always keep just the right number of combs in the hive, according to strength of colony, without having to add or take away a full story at a time. This I

used to find quite an important advantage in Northern Iowa, in the spring. I can get into the brood-nest for any manipulation easier and quicker; I simply have to remove cover, insert knife between any combs in the hive I wish to examine, push a little sidewise, and the frame I wish is ready to be handled; and in closing up, a single push shoves all the frames back into place. I use self-spacing frames. I never have to take out comb covered with bees, and set outside of hive to give room for work. I never have any upper story to lift on and off. This, to a person of my health and strength, is a very important advantage. I can keep a closer supervision over the condition of my bees, as, every time I do any manipulating, I am much more apt to notice if any thing is wrong, or beginning to get wrong, than if I go into only an upper story.

I do not use queen-excluding zinc. If one's locality requires the use of zinc, a sheet can be fitted in on each side of the brood-nest, but not so easily or cheaply as in double hives. In this section I don't want to use zinc in any hive. In Iowa the use of first-class Italian bees suited me better than zinc, as their disposition was to breed largely early in the season during a light flow of honey, but to drop raising brood largely, and fill every thing full of honey during a heavy flow. If the honey-flows are the same in Canada as they were in Iowa, short and heavy, then success with the single-story hive requires the use of the best stock of Italian bees.

I have answered Mr. Heise's questions briefly; but if he or any one else should decide on testing the use of these hives, I would suggest that he will find the subject gone into much more fully in an article, or, rather, articles, published in GLEANINGS some 12 or 15 years ago, under the head of "How to Use Single-story Hives." O. O. POPPLETON.

Stuart, Fla.

HOT-WATER VS. COLD-WATER TREATMENT OF BEE-STINGS.

Cold-water Packs Dangerous, and Why.

BY CHALON FOWLS.

On page 68, *American Bee Journal*, Dr. Gallup advises us to treat bad cases of bee-stings with a cold wet-sheet pack, and also same treatment for horses. As I do not write for that journal, I wrote nothing in remonstrance, and I fully expected the subject would be discussed by some of the able writers in that journal. But it has not been; and as the efficacy of this treatment has not been disputed, I suppose it's no wonder that Rambler hails with delight any remedy that dispenses with whisky, which, by the way, I hate quite as cordially as he does; and you too, Mr. Editor, throw up your hat in a way that would imply that you indorse that treatment. Hold on! have you ever seen it tried in a very bad case? I notice in your A B C of Bee Culture one of the authors (presumably A. I. K.) says that plunging the hand in cold water made it ache worse; but he thought it was because he

allowed his mind to dwell upon it. No, it was the cold application, and nothing else.

Before any one uses this treatment for a dangerous case I would suggest that it be tried on less dangerous cases, and see if it allays the pain any more than its natural subsidence. For my part, if it were a dangerous case in my family I would defend them — yes, risk my life, if necessary — from such treatment, for I verily believe that such treatment might cause death to the person so treated.

Well, if a cold-water pack is condemned, you will ask, "What shall we do?" Why, just heat the water. It ought not to be very hard to convince either of the Roots that, while *cold* water might be injurious, *hot* water might cause most beneficent results. In order to render a reason for the faith that is in me I will give some experiences that I have had the past season that brought me to my present way of thinking.

One day last spring I went and opened a queenless swarm of hybrids, without smoke or veil. On the instant one of the vicious insects made a "bee-line" for my eye, and stung the naked eyeball quicker than a wink. To say the pain was intense is but putting it mildly. In fact, it was the worst case that I had had in twenty years. Luckily it was at the home apiary. As I had used cloths wrung out of hot water for neuralgic pains in the same organ, I thought of that at once. I could not see out of either eye, but managed to grope my way to the house, at the same time calling for help. As soon as the hot water could be gotten for me I applied the cloths, with the result that it very much alleviated the pain, and just in proportion to the heat of the cloths too.

Later in the season I had occasion to use the same remedy again. Early one morning, hearing a racket I jumped up and ran out barefooted and bareheaded, and found my horse had got a gate open and had got out through the fence, and was caught by her tether rope in some bushes where two late swarms of bees had been hived. She had entirely demolished one hive, reducing it to kindling wood, and had just kicked over the other one when I heard the racket. Of course, the air was filled with infuriated bees, and the mare was performing the circus act. I tried to get up and cut the rope, but could not get near enough to the frantic beast without great danger of being struck down. I then beat a retreat to the house, meanwhile smashing off handfuls of bees that were stinging my face, neck, and scalp, or anywhere they could get a chance; but no sooner had I reached the house than I reflected that I had left the faithful old mare to be stung to death, and I rushed back to the fray and succeeded in loosing her tether at the other end.

By this time I had an overdose of rheumatism medicine, or enough to prevent rheumatism the rest of my life. I hustled to get some hot water, and applied the hot cloths as before, with the result that, in twenty minutes or so, the pain was reduced so I could attend to the horse. I found her eyes swelled shut, and she was rearing and plunging, and throw-

ing herself down in quick succession in a way that seemed as if she would pound herself to pieces soon if she did not die from the stings. Indeed, no one expected she would live; and one of the neighbors, who had once seen a horse stung so it died, said she would die in half an hour or so. I thought I could at least do something to alleviate the pain. One of my neighbors helped me, holding her down when she threw herself, and I applied boiling hot water as it was brought from the kitchen stove, just bathing the parts where stings were thickest, and sopping the rag on and off so as not to scald the flesh. Well, in two hours or so, with this treatment, all could see she was better; as she stopped throwing herself when we let her up, we quit using the hot water then. She could not eat or drink much for a day or two, as her lips were swollen away from her teeth. She was very stiff for a week, and had the farcy for a month, caused by the strain, I suppose. Where stings were thickest it broke and ran, thus getting the poison out of her system. It was over a month before I thought her well enough to use at all, and four months before she would lie down at night or had regained her flesh, and was apparently as well as ever.

Brother bee-keepers, give the hot-water cure a trial, and I have no fear of your verdict in comparison with cold water. I fear the use of cold water, in that it would retard circulation and so drive the pain into some vital part, while hot water would promote circulation, and tend to draw it to the surface.

Oberlin, O., April 9.

[I believe you are right, friend Fowls, and that the time will come when hot water as a remedial agent for aches and pains, as a drink (in copious draughts) for clearing out sour or disordered stomach, and as a substitute *a la* Dr. Hall for physic, will be better recognized than at present. Indeed, if I am correct, the schools of medicine now recommend *hot* water for sprains, bumps, and bruises, rather than cold applications. In the case of bad sprains the doctors usually advise water almost scalding hot, and the sooner applied the better. When my wife sprained her wrist some two or three months ago, we applied hot water at once. She could hardly endure the pain without the water; but with it, frequent renewing of the cloths made her wrist very comfortable.

Many another time have I applied hot-water cloths to her forehead when she had those hard neuralgic headaches. While they didn't cure, they alleviated greatly the throbbing pain. Several times when my boy has had sudden attacks of congestion of the lungs we applied rubber bags of hot water to the chest and back. The effects were almost magical.

With regard to stings, I do not know that I was ever stung badly enough to need special treatment; but my experience as above given would give me great faith in hot water. Hundreds and perhaps thousands of others who read these lines may see the time when the simple instructions given in this article may not only afford great relief, but actually save life. Hot water applied to a part stimulates and assists circulation; but *cold* water causes

contraction, congestion in the part, and a retarded circulation.—Ed.]

PLAIN SECTIONS VS. OLD STYLE UNDER THE SAME CONDITIONS.

BY S. T. PETTIT.

Dear Editor:—Evidently, touching the matter of plain sections, fences, and dividers, we don't quite understand each other. But, first, I will say I regret the terms I used in the *Canadian Bee Journal*, and beg pardon. But still I can not think, all things being equal, that a plain section will be filled any better than a bee-way section. *This is what I mean: give the bees "free communication in every direction," with both kinds, and the one will be filled just as well as the other.* I can see no reason why it will not. It is the passageway separator—"the free communication in every direction"—that does it, and not the section. In your footnote on page 257, you criticise the divider I sent you, and call it a fence, and seem to think it was intended to be used as a separator. Now, that is all a mistake. No, friend Ernest, I beg your pardon; but the $\frac{1}{4}$ -inch vertical slats are not too thick. I have tested hundreds, and this season I intend testing a large number with vertical slats $\frac{5}{16}$ inch thick. But in other respects it was not a success; and, as I have told you, I am using those with $\frac{3}{8}$ -inch holes in preference. I admit it was poor workmanship, and certainly it was necessary to call attention to it; but it was made by hand to be used in experimenting, and that is my excuse. However, to-day I send you a separator made this winter, and I hope you will agree that the "workmanship" should pass. You will see that I have faith in free communication in passageway separators. You will observe that the holes are $\frac{5}{16}$ inch. But I believe your fence is all right for separators used with plain sections; but I can not hope that it will give good results when used as a divider. Nothing less than $\frac{1}{4}$ -inch vertical slats should be used outside the divider for best results. There must be room for a nice company of bees in shape to be comfortable and contented.

Belmont, Ont., Can.

[Why, friend P., we agree to a dot; and especially do I agree with that sentence of yours that I took the liberty of putting in italics. Any one who would try to take a contrary view would be, to say the least, hardly in his right mind.

When I referred to poor workmanship I did not have in mind your divider, perforated with holes—I meant only the one having horizontal slats nailed on cross-cleats, which, to a certain extent, is the principle of our fence, but lacking in the essential features that I named.

No, friend Pettit, I do not think less of a man, especially one of about your size, if he should differ with me regarding the value of the plain fence and section when used together. When one is fair in the statement of his differences, and does not accuse me of questionable scheming or of dishonesty, I respect him the more because of his honest and frank statement.—Ed.]

THE EUCALYPTUS (OR PEPPER) TREE.

BY J. H. MARTIN.

The pepper-tree (*Schinus molle*) is a native of Peru. It is termed a small tree by some authorities, but in California it finds a congenial soil and climate for development into a robust tree nearly as large and spreading as the live oak. It is an evergreen, and its long drooping branches bear an abundance of delicate pinnate leaves. The blossoms are small, white, and arranged in terminal clusters. The tree derives its popular name from the resemblance of the seed or berry of the common pepper-berry. The seed and the foliage have a distinctive peppery flavor. The color of the

amount, there is a difference of opinion among bee-keepers. Sometimes, when the skin of the berry cracks, they work upon that with about as much vigor as they do upon the blossom. The nectar they get from either the blossom or the berry partakes of the nature of the tree, and is peppery or strong in flavor, and dark in quality. We have heard of no great yields from this source; but as it is in bloom at a time when other plants are secreting nectar, and of a better quality, the pepper comes in for some condemnation for giving a pungent flavor and dark hue to what would otherwise be first-grade honey. On this account some bee-keepers are opposed to planting it. It is distinctively a shade tree, for the berry and the timber are of but little use.



BLOSSOMS FROM THE EUCALYPTUS (OR PEPPER) TREE.

berry is a bright red. The tree bears an abundance of them, and the long clusters intermingled with the green feathery leaves make a pleasant contrast.

The tree is planted largely for shade, and is an object of beauty except in one particular. It is said the peacock, when strutting in all the magnificence of a spread of tail feathers, drops them suddenly when it looks down upon its homely feet; so the pepper-tree might bow its beautiful head in shame upon getting a glimpse of its rough and misshapen trunk.

When the pepper is in full bloom the bees work incessantly over the tiny blossoms. They gather pollen and some honey; but as to the

The berry has some medicinal virtues about it, and preparations from it are recommended for the cure of coughs, colds, and lung troubles. Mr. Levering, of this city, has a method for getting the full medicinal value from the berry, and incorporating it in honey. It is quite probable, however, that, if the honey could be obtained as distinctively pepper as we get the sage, it could be sold upon its medicinal qualities alone.

Honey from the eucalyptus-tree has found ready sale upon its medicinal qualities. The same may be said of horehound and other distinctively flavored plants. The time may come when, by proper grading, we can secure these

various virtues in the honey, and sell it upon the merit of food or medicine. I am, therefore, inclined to speak a good word for the pepper-tree, and advocate the planting of it, for a noble and beautiful tree is a thing of joy every time we look at it.

Los Angeles, Cal.

[If I am correct, the eucalyptus was first introduced into California, where firewood is so high-priced and scarce, with the view of using it for fuel. It is of tremendously rapid growth, and I saw little patches that might be called a dense forest that was all grown in about six years. In fact, trees were pointed out to me, 70 feet high, that grew in seven years, or ten feet every year on the average. The tree has been introduced to some extent in Bermuda, and also in Florida; but nowhere else does it make the astonishing growth that it does in California. Our artist has succeeded in giving a most lifelike picture of its graceful foliage, blossoms, and berries; and somebody, I do not know who, has been so careless as to set that vase on top of a brand-new A B C book. Never mind; if the water does not get slopped over, it probably will do no harm.—A. I. R.]

THE ONTARIO COUNTY CONVENTION.

Apis Dorsata; Glimpses of the History of the Honey-bee and Bee-keeping, etc.

BY FR. GREINER.

When Mr. F. Benton gave his account of his exploits in foreign lands when in pursuit of different races of bees, the supervisor's rooms of the Canandaigua court-house were crowded, and, though he spoke quite at length, he held his audience spellbound from beginning to end. The professor seemed to be at home in every thing pertaining to bee-keeping in Germany, Austria, Italy, Syria—in fact, I don't know where not. He seemed to be acquainted with all the leading lights in those lands. In Carniola he had remained four years and had bred the Carniolan bee.

YELLOW CARNIOLANS AND THEIR ORIGIN.

I remember we had quite an animated controversy some years ago in regard to what the Carniolan bee should look like. Mr. H. Alley asserted that it was originally a yellow bee, and he advertised his golden Carniolans at the time very largely. Breeders from Carniola assured me then that, in a Carniolan swarm, perhaps one in fifty bees might show a trace of yellow on first band.

Mr. Benton has traveled all over Carniola, and his explanation of the yellow admixture appears quite reasonable. He says, from south of Carniola, where yellow (Italian) bees predominate, the peasants have for ages past been in the habit of moving their bees northward at certain seasons of the year into the richer pasture-fields of Carniola. From the north part of the province the peasants there have come southward with their gray bees, and so the yellow bees have come in contact with the grays. Very often the peasants

would sell out, and, neither buyers nor sellers being very particular as to the color of the bees, they became more and more mixed. As a natural consequence, the further south one goes in Carniola the more of the yellow blood the bees show. In North Carniola the bees are a pure gray.

Mr. Benton selected for his breeding-stock among the bees offered for sale by the peasants such as were most typical, and at the close of the four years he remained in Carniola he had what he claimed, the finest lot of Carniolan bees anywhere. Now, although Mr. B. tested all sorts of bees after that, it is surely a feather in the cap of the Carniolan bees that his present stock consists entirely of such. I want to mention further that it is possible to breed out their swarming propensity. Mr. B. has succeeded in this to such an extent that he can notice but little difference between his Carniolans and other races in this respect; and as to their business qualifications, he thinks they are second to none.

Speaking of the best business bee reminds me of what Mr. Weygandt, of Flacht, Germany, says on this point: "Have we not made a mistake in importing a southern race of bees, a bee naturally not so well adapted to our climate? It seems to me it is going a step in the wrong direction. Should we not rather go to the North, where bees have to endure greater hardships, where conditions are less favorable? The bees in Norway, for instance, must of necessity be a hardier race. By them we may infuse stronger blood into our own race of bees."

I want to ask, is this not a point worth considering? I should like to see such a bee from a northern clime imported. I should like to try them.

CYPRIAN AND SYRIAN BEES.

To return to my subject: After having been engaged in the queen business for four years in Carniola Mr. Benton started for Cyprus. He found the bees there very uniform, as one might expect on a small island. They were very yellow, and slightly smaller. The high winds nearly always prevailing had caused the bees to develop there great strength of muscle, fitting them well for long flights; and, further, there are a great many hornets in Cyprus, which often attack the bees—yes, sometimes exterminating whole apiaries. In order that they may be better able to defend themselves, the bees have gotten into a habit of clustering around the entrance of their hives, and pouncing upon attacking wasps as soon as any come near. By such constant irritation by the wasps, the bees in time had become very cross, and so, indeed, they were found. Still, Mr. B. handled them as easily as blacks, and even preferred them. He says he occasionally opened a hive without smoke, and was led to believe that a more prolonged test of the Cyprians in America would have resulted in a gentle bee.

Mr. Benton also visited Syria. The Syrian bee resembles more nearly the Cyprian than does the Palestine; but neither one is as manageable as even the Cyprian. The Palestine bee nearer approaches the Egyptian, which

latter is also a very irritable bee, exceedingly inclined to produce fertile workers.

BEES IN GREECE.

In Greece also Mr. B. found quite a vicious bee, large and dark, possibly a mixture of Eastern and Western bees. A sort of round basket, fitted out with top-bars, was used as a hive. It may have been in use for a thousand years. People there have a way of keeping their strained honey in goat-skins — hair side in, of course.

TYPICAL ITALIANS, WHERE FOUND.

The most typical Italian bee Mr. B. found near Bologna, and northwest, in Parma, Bergamo,* and Modena. Sardinia had a fairly good Italian bee.

Along the north coast of Africa he found the black Tunisian bee in Tunis, Tripolis, Algeria, and Morocco. It is the very worst bee for comb honey, on account of the great amount of propolis they daub on every thing, and because of the watery appearance of the cappings. At one time they were sent out from England as the Punics, as most of us remember. North Africa is a regular bee-paradise. The rosemary honey gathered there is the finest honey in the world, according to Mr. B. The natives practice migratory bee-keeping, moving their bees on camels. The hive in use is a long cylinder of clay, closed with a clay disk on each side. The honey is removed from the rear at the close of the season. Bees are never killed for their stores, but enough honey is always left them for their subsistence.

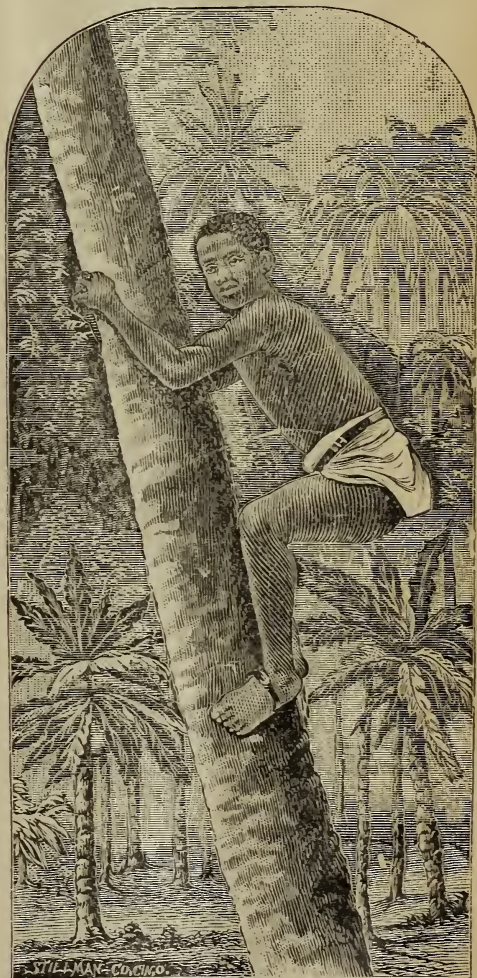
APIS DORSATA; HOW THE NATIVES GET THEM.

Mr. Benton described Ceylon as a perfect fairy land. After his return from Java he found the *Apis dorsata* there. There were numerous nests of these bees on one tree — I think 12 or 14 of them. The natives who escorted him constructed a ladder for him in a short time out of long poles, sticks, and some sort of twine. By means of this he was soon in the top of the immense tree where the nests of the *dorsata* were located on the under side of limbs. The bees paid little attention to him until he touched them with his heavily gloved hands. They then arose in great numbers, and tried to sting every thing around, so Mr. B. made his retreat. Afterward he approached them again, and coaxed them up with sweetened water, sprinkling them with it, when he could handle them without difficulty, although he was not able to find the queen. The comb this colony had was $4\frac{1}{2}$ feet in length. The natives undertook the job of obtaining the bees for Mr. B. afterward. It is rather amusing, but they scorn the idea of using a ladder. They have a way of climbing the largest trees in a sort of monkey fashion. It was comical enough the way Mr. B. explained just how they did this. It is shown on p. 8 of GLEANINGS for 1882, and reproduced here.

It must be understood that the natives are clothed only with girdle cloths, and it would seem to us rather risky to try to do any thing

*I am not sure of the spelling of the name.

with such bees under such conditions; but they seem to understand just how to do it. After one of the natives had reached the top of the tree (or, rather, a limb), not far below one of the nests, he lighted a torch, which he had brought with him, and made a smudge with it directly under the bees. Thus frightened they arose, leaving all their comb exposed, and now was the time for the native to do his work. A long cord was thrown over the limb just where the comb was built below it. A light basket, which he also had carried with him, was fastened to this, and was held in



NATIVE CLIMBING A TREE FOR *APIS DORSATA*.

proper position, so it would be just under the comb. Now with a long knife, which he drew from his girdle, he slashed into the comb, cutting it loose, and causing it to drop into the basket. When all was gathered in, the basket was lowered by the cord. The assistants waiting below took it and made haste to reach a spot of safety. The native up in the tree was also not slow to slide down

and seek shelter. It was indeed astonishing to see with what celerity he made his way down the tree. Of course, he had good reason to be in a hurry; for, after being thus robbed, the bees sailed around, assailing every thing in the vicinity. However, they could not be induced to collect and cluster; and as to getting possession of them, the undertaking was a failure. The natives did not quite comprehend what Mr. B.'s object was; and in securing the comb and honey, and especially the brood, which is a greatly esteemed delicacy with them, they evidently thought they had done the job to Mr. B.'s entire satisfaction.

MR. BENTON ATTEMPTS TO GET *APIS DORSATA*.

Another attempt was made to secure a colony of *Apis dorsata* later when a number of nests were found on a steep hillside under high projecting rocks. The natives again constructed a long ladder out of poles, sticks, and ratan ropes, by means of which they reached the bees. They succeeded in constructing a platform just below the bees, from which they expected to do the work of transferring, and, after night had come, Mr. Benton proceeded with it. He had calculated that the bees, when taken in the night, would not leave their comb, and in this he was right. He succeeded admirably in securing two colonies of *dorsata*—the first that ever were transferred into hives. The frames used were made of 1½-inch strips; the hives were one foot deep and 3½ feet long, and five frames were used in it.

Another colony was discovered higher up on the hillside, in a cavity. There were three combs alongside, while the other nests had but one comb. This colony was also transferred by Mr. B., and secured in good shape. The natives always received the odds and ends of brood that would naturally accumulate in transferring combs into frames, and which were sweet morsels to them.

Unfortunately a very heavy storm broke loose at this time, and before any shelter could be reached all were drenched to the skin (insignificant as far as the natives were concerned). The exposures were such as to effect Mr. B. seriously, for he was taken ill with a fever. In consequence of this he could not attend to the bees as he should have done. As soon as he could, and when he had only partly recovered, he started for Syria, on a French steamer, taking with him the three colonies of *dorsata*. They bore the confinement of twenty days very well, although one colony died on account of lack of stores. After the arrival in Syria the bees were allowed to fly; but the high winds affected them very badly; and as Mr. B. was compelled to stay two weeks longer on account of his health, finally the last of these bees died. Thus ended the undertaking of securing *Apis dorsata*, which had cost Mr. B. much time and money, and for which he risked his life and his health many a time.

It remains to be said, that, after transferring the *dorsata*, they did not readily patch up their combs, as we are used to seeing with our common bees; but they seemed to work and gather honey. The drones, as well as the workers of

dorsata, are bred in the same combs, and the former are slightly smaller than the latter.

BEEES IN HINDOOSTAN AND JAPAN.

In Hindoostan another race of bees was discovered by Mr. B.; also another gray bee in Japan. Both of these it might be interesting to test here. But the introduction of these bees, and especially *Apis dorsata*, is so problematical, and connected with so many difficulties in every way as to make it impracticable for one man to undertake it. That should be the work of the Agricultural Department.

That the most excellent address of Prof. Benton was well received by the large audience was very evident from the long-continued applause which followed, and the many questions asked him afterward during the discussion.

Another interesting feature of our convention was the reading of an essay by Mrs. S. J. Smith, entitled, "Anomalies analogous to Reason and Instinct," which captivated all who were present, which, however, I am unable to give, not having taken any notes.

The advisability of again asking for a spraying-law to prevent spraying of fruit-trees while in bloom was discussed. It was also decided to ask for a more practical anti-adulteration law.

Naples, N. Y., March 10.

To be continued.

[The facts given above are indeed very interesting. There can be no sort of doubt that Mr. Benton knows more about the different kinds of bees and their habits in their native climate than any other one man in the world.]

As some of our later readers have never seen the illustration above alluded to, of a native of Ceylon climbing a tree in quest of *Apis dorsata*, I have concluded it might be interesting to have it reproduced. As originally printed, Mr. Benton regretted that it was made to represent a native of the island of Cyprus instead of Ceylon, hence we are the more glad to get it right now.—ED.]

ACETYLENE GAS.

BY M. F. BAKER.

We are much interested in Mr. C. H. Dibern's article on acetylene gas, in *GLEANINGS* for Mar. 15; but from much experience and observation in that line we think some of his statements are not quite consistent with facts.

While insurance companies had formerly insisted on a generator being placed outside and some distance from buildings, now, after careful investigation, it is the general thing to allow generators to be placed anywhere in any building (see several regulations inclosed), without any extra charge, some openly claiming acetylene to be a means of decreasing their risks, as being safer than kerosene, city gas, or electricity. Insurance companies are not in the habit of increasing their risks without extra pay; hence this evidence of the

safety of acetylene should be conclusive. According to the basis given by Mr. Dibbern, of an explosive mixture of 15 per cent of acetylene with air, the dangers he speaks of are doubtless much exaggerated; and as regards leakage, the danger is obviously less than with city gas, which is fully as explosive in that mixture as acetylene, yet accidents are very few considering the great amount used.

The strong odor of acetylene, and the small quantity used, about one-fifteenth of the quantity of city gas, are greatly in its favor. Its very pungent odor doubtless impressed Mr. Dibbern with a sense of danger, while in fact it is a great element of safety. The same leakage of water gas, for instance, would have been scarcely perceptible while just as dangerous. In fact, a person could scarcely breathe in a room having an explosive mixture of acetylene, on account of its strong and nauseating odor, while other gas would hardly be noticeable.

The probability is that any leakage of gas in Mr. Dibbern's experience was a long way from causing an explosive mixture. The offensive odor of acetylene would likely impress a person with the strong sense of danger with one foot of acetylene in, say, three thousand feet of air; and it is unlikely that Mr. Dibbern had a greater mixture, instead of one to seven, as might be inferred. His reference to fifteen per cent of gas escaping into a cellar is extremely improbable. In the first place, long before one foot of acetylene would escape into three thousand feet of air in an ordinary cellar, the odor would be very noticeable, and even offensive, in every part of the house, unless the cellar was well ventilated, which would, of course, obviate any danger.

In case of fire no gas could escape unless the gas-pipes were melted or broken, at which stage of a fire a little more or less heat would be of little consequence one way or the other. Mr. Dibbern entirely overlooks the fact that acetylene unmixed with considerable air (as is always the case in a gasometer) is absolutely non-explosive, and would simply burn like grease, instead of exploding like gunpowder.

Mr. Dibbern's conclusion that acetylene is explosive because it will ignite from a live coal is quite erroneous, not to say unscientific. It simply shows that acetylene burns at a lower heat than other gas or kerosene, which is much in its favor, as it gives a cooler and more comfortable light in summer time, and there is much less danger of any thing taking fire from being close to a gas-jet, and which has frequently caused disastrous fires. This is particularly significant when we consider that an acetylene flame from the same amount of gas has but two-thirds the heat of a flame of city gas, and that only about one-fifteenth of the quantity is used for the same amount of light.

There are still objectionable features that have not been fully overcome in hand-lamps for acetylene. However, there are now small generators on the market that are inexpensive, and are giving good satisfaction, that will likely take the place of the hand-lamp.

Buffalo, N. Y.



SOMETHING FOR BEGINNERS.

Question.—I am a beginner in bee-keeping, and have been persuaded to take GLEANINGS. I see that you have a query department in said paper, and I wish you would tell us through that department what you consider the prime thing a beginner should know first. What is the main thing in bee-keeping necessary to know?

Answer.—There are very many things in bee-keeping which are considered of first importance; and the beginner should understand all of these, if he or she would be successful; hence no one should enter the ranks of bee-keepers without first reading some one of the many good works on bee-keeping, such as Root's A B C book; Langstroth on the Honey-bee, by Dadant; Cook's Manual of the Apiary; Quinby's Practical Bee-keeping, by L. C. Root; Bees and Honey, by Newman, etc. There are more good books on this subject than I have time to mention here. Having procured one of these books, carefully read it two or three times till the whole is familiar to you from beginning to end, when you will be ready to subscribe for and read intelligently one or more of the several good bee-papers there are published in the United States.

Having got so far I will tell you one of the many other things you will need to know, for on this hangs very much of that which will bring prosperity. In nearly all localities where bees can be kept there are certain plants and trees which give a yield of surplus honey at a certain time of year, while, aside from this, there is little more honey obtained by the bees than is needed to supply their daily wants. Some localities give a surplus at three stated periods, others at two, while the majority give only one such yield. Hence it must be apparent to all that, if such a honey-yield (or yields) passes by without any surplus, none can be obtained during the season. From this it will be seen that, in order to be a successful apiarist, a person must have a knowledge of his locality, and also know how to secure the laborers (bees) in the right time, so they can be on hand when the honey-harvest is at its best. Failing to do this there is little or no profit in apiculture, and my main reason for writing on this subject is that those who read may obtain the best results from their bees.

Practically first, then, we have the location. Here in Central New York our honey crop comes mainly from linden or basswood, which blooms from July 2d to 15th, and lasts from ten days to three weeks, according to the weather. In other localities in this State white clover is the main crop, coming in bloom June 10th to 16th; and, again, in others, buckwheat, yielding honey in August; but as the larger part of those living in the Northern

States have a yield of honey from basswood I will speak of that as the harvest in illustrating what I wish to. Bear in mind, however, that it devolves on the *reader of this* to ascertain by careful watching just when and what is the source of his surplus honey, so as to work accordingly.

After having determined when we may expect our harvest of honey, the next step is to secure the bees in just the right time for that harvest. If you have a field of grain to cut, you hire the laborers when the grain is ripe, not before or afterward, yet in keeping bees hundreds pay no attention to the matter of securing laborers, so that, as a rule, they are generally produced so as to become consumers rather than producers, and for this reason we often hear persons claiming that bee-keeping does not pay.

The queen is the mother of all the bees in a colony, she laying all the eggs producing them. Under the greatest stimulation, she is capable of laying from 3000 to 4000 eggs a day, yet often she is laying only from 500 to 1000 eggs daily at the time she should be doing her best. After the egg is laid it takes three days for it to hatch into a little larva. This larva is fed six days, during which time it has grown so as to fill the cell, when it is capped over and remains hid from view for twelve more days, when it emerges a perfect bee. This bee now works inside of the hive for sixteen days more, when the colony is in a normal condition, doing such work as feeding the larvæ, building comb, evaporating nectar, etc., when it is ready to go outside as a field laborer; and at forty-five days, during the working season, from the time of hatching, it dies of old age, and another generation takes its place.

From the above it will be seen that the egg must be laid at least thirty-seven days before the honey-harvest in order that our bee have the opportunity of laboring in that harvest to the best advantage.

Now, if the harvest is basswood, commencing to bloom, say, July 7th, the egg for our laborer should be laid on or before June 1st. But how shall we secure the laying of the eggs just when we want them? There are several ways of doing it, such as feeding the bees thin sweets when you wish the queen to lay more prolifically; giving young bees from other colonies that will feed the queen an extra amount of egg-producing food, etc.; but I will speak here only of the plan that has proven the most successful in my hands, with the least drawback, of any I have ever used. About May 10 to 20, according to the weather (if warm or an early season, the 10th; if cool or a late season, then the 20th), I commence to do what is known as "spreading the brood," which is simply reversing the brood-nest at this time, putting the combs having the least brood in them from the outside in the center, and those having the most brood on the outside. This stimulates the queen to fill these nearly broodless combs with eggs clear down to the bottom and out at the sides, laying twice the eggs she had been during the days just past. In a week or so the combs of eggs

and larvæ are spread apart, and a frame of comb having honey in it set between them. The removing of this honey causes great activity; the queen is fed abundantly, and the comb is filled with eggs in a "twinkling." If the colony is strong in bees, and we have the combs of honey on hand, two combs can be set in at this time. In a few days more the brood is reversed again, soon after which the brood is likely to fill every comb except the two outside ones, and these will soon be admitted into the brood-circle. This plan of manipulation causes the queen to fill the cells much more quickly with eggs than she would otherwise have done, and thus many valuable bees are gained, so that there will be a multitude of laborers at the right time, and, as I have often proven (by manipulating one row of hives in the yard, leaving another row untouched), nearly twice as many as there would have been had the bees been allowed to take their own course. In this way the best possible results in honey are secured, and I would advise any beginner to familiarize himself with this method.



DUCKS AND BEES; A HARD WHACK AT THE EDITOR; T SUPERS VS. SECTION-HOLDERS.

Mr. Root:—I notice on page 222 you say that ducks and bees thrive nicely together, quacks to the contrary notwithstanding. Now, if you are right I am one of the quacks you speak of, for, ever since all our young ducks died with their throats full of bee-stings, I have been making the ridiculous statement that *young* ducks and bees do not thrive at all together—at least, mine all died. I have never dared to try to raise any since, but I wanted to this year; and I'd give quite a little to *know* you are right. Some of my neighbors claimed last season that my bees were killing their young ducks, as several had died with stings sticking in their throats; but perhaps it is a common thing for live ducks to have bee-stings sticking inside their gullets, and perhaps the bee-stings did not cause death; but it looks rather bad.

I notice on page 208 you call for a show of hands from those who have used both the T-super and section-holder arrangement; and as my name is *Hand*, and as I have used the T super ever since it came to light, I ought to be a judge of *its* merits by this time; however, I have used the section-holder only the past season. I always considered the section-holder a wide frame mutilated to fit a super which was made for some other arrangement; and after one season's use I am convinced that the wide frame was completely spoiled by the mutilation, and I have 200 of them I'd like to give to some one who would take them away, as I shall never use them again. I think a wide frame or a bottom slat is preferable to a

section-holder. The T super is a very good arrangement, and I prefer it with the T tins nailed fast. I think your Hilton super is about the best arrangement for comb honey.

Wakeman, O.

J. E. HAND.

[I really enjoyed the above, even if it did leave me a little worsted. I like to have any one talk right out plainly—that is, providing he does not accuse me of being dishonest and of seeing nothing but the almighty dollar when I suggest an improvement in hive construction. I shall have to acknowledge that friend Hand has had more experience with ducks than I have—at least, it has been of a kind that counts for more than mine; but, my, oh my! What kind of bees does he keep? In my rambles among bee-keepers over the country, I have seen ducks and bees together in the same yard. If I remember correctly I asked the question whether the bees stung the young ducks; but the very idea was ridiculed.]

Regarding the T super, I would state that the section-holder was made topless to facilitate the insertion and removal of sections. My experience has shown that a top-bar to a wide frame is not absolutely necessary for the majority of bee-keepers. Although friend Hand expresses himself most decidedly in favor of the T super, I couldn't help a "smoile" when I came to the place where he said he wanted his T tins *fixed*, not loose. Please don't tell Dr. Miller that.—Ed.]

BUCKWHEAT HONEY; DOES IT COME FROM A CROP SOWN EARLY IN THE SPRING? ETC.

I noticed in GLEANINGS some time ago the question asked if buckwheat yielded honey early in the season. We have sown it for several seasons as early as we could in spring, and not have it freeze out, mostly for the honey we receive from it. There is always a good flow when we have cool damp nights with a hot sun the next forenoon. It will not yield much, however, until it has been in bloom for some time. We have raised two crops of the Japanese in one season.

SELLING EXTRACTED HONEY IN BUTTER-DISHES WHILE IT IS CANDIED.

In regard to candied extracted honey, I think it the best plan to put it in tin pails for retail, and educate our customers to use it in the candied state. There are many who like it best this way. One of the dealers here has worked up a good trade this winter. He has the honey in large jars, and cuts it out and sells it in butter-dishes. I can not see any reason why honey should be taken back when candied. I put all my honey for retail in tin pails, with instructions on label for reducing to liquid if desired.

J. T. VAN PETTEN.

Linn, Kan.

WATERING BEES; HOW TO KEEP THEM AWAY FROM TROUGHS, ETC.

I have been troubled with bees drowning in stock-watering troughs, mostly in cool weather in spring and fall. As a preventive I use a bucket or tub with a sugar-sack spread loosely on top, and a brick-bat to sink the center of the sack into the water. I also have a few

auger-holes in the pail or tub. Then I take pieces of a gunny sack and wrap around corn-cobs and put into the auger-holes loosely, so that the cloth will be wet on the outside all the time. The bees seem to catch on to these cobs and rags in a very short time, and no trouble by stock, or bees drowning. I usually put a little salt in the water.

O. C. BURCH.

Fairhaven, Neb., Oct. 25.

HOW TO FILL SECTIONS WITH PIECES OF COMB.

Break the comb in two or three inch pieces; place it in a basket; fill another basket full of sections. Now make a small fire in the cook-stove (just previous to this stage of your proceedings get your wife off on a visit). Now get your baskets and a chair, and sit down by the stove. As soon as it is hot enough to melt the comb you are ready for business. Take a section and place it upside down on the stove; be quick now or your section will get too warm. Next place a piece of your comb on the stove close by the section; as soon as the edge of the comb has melted level, quickly place it in the section and set to one side. After you get the hang of it you will be surprised how quickly you can fill a super. Some one might ask, "Will bees readily enter a super prepared that way?" Well, I should say, try it and see.

Marshfield, Mo. J. D. WHITTENBURG.

BEEES IN CALIFORNIA.

Friend Root.—Inclosed I send a newspaper clipping which may be of interest to you and your readers. It expresses the situation, with but small variation, of the bee interests in this State.

The apiarists of this county will suffer heavy losses this season, as will stockmen and sheepmen. In an interview last night, M. H. Mendleson, a prominent bee-keeper of the county, reviewed the condition of the industry as it is to-day. He stated that there would be no honey produced in this county this year. But instead of a yield the bee-men would be compelled, on account of the dry season, to feed their bees in order to carry them through. He has between eight hundred and nine hundred stands. It is his purpose to destroy his weaker stands, about one hundred, and feed honey to those remaining.

J. F. McIntyre, who has a large number of stands, will remove this week from the Sespe to Bakersfield, 260 stands. In 1886 there were 10,000 stands in the county, now there are but about eight thousand. It is estimated that there are about seventy-five bee-keepers in the county. On the average the cost of production is about $4\frac{1}{2}$ cents per pound. Last year the market price ruled below this point. With the best of care, the average loss of bees is from 2 to 3 per cent. per annum. This year, as usual, many keepers can not afford to buy honey to feed their bees, and therefore the bees must starve to death. From one-third to one-half of the bees in the county will die. The price of honey will therefore be soon on the onward march.

The few who can get their bees near large tracts of orange and lemon trees have a fair show of getting something, unless cut off by cold weather. All citrus fruit is irrigated, therefore the dry weather does not affect that so seriously, as the water for irrigation comes from snow and rain in the mountains, which are more abundantly supplied with moisture than the valleys.

Mr. E. Hart, of Pasadena, took two tons of orange honey last year from about 100 colo-

nies. Of course, it was not entirely pure orange honey, for in good seasons there are many honey-plants in bloom at the same time as the orange; but it was very nice honey, as I can testify from personal examination.

The great drawback to orange honey is its uncertain yield, being so sensitive to weather conditions. It would never pay to keep bees where orange was the only source of honey.

G. W. Brodbeck has moved his bees some 40 miles to alfalfa and moist-land pasture. He is a "rustler," and will make it win if any can.

J. H. Martin thinks of leaving his bees where they are, as there are some citrus trees near.

So it goes with all the bee-men—all are preparing for the worst. C. A. HATCH.

Pasadena, Cal., Mar. 25.

THE IMPROVEMENTS ON HIVES MADE AT THE HOME OF THE HONEY-BEES; THE VALUE OF THE VENTILATED BOTTOM-BOARD.

My gable cover is much like yours, except that the top boards are $\frac{3}{8}$ inch thick; they overlap, also, about 1 in. over the sides and $\frac{1}{2}$ in. at the ends. The space between upper and lower boards is also greater than in yours, as there is 1 in. space between the boards at the closest point; and to prevent hornets and other insects from causing any annoyance a strip of zinc is run into grooves along the sides. The groove to run the zinc into is right along the edge of the upper surface of the lower board, and one inch from the lower edge of the upper board. This groove in the upper board is a *great* factor, also, in preventing any tendency to curl or twist. It is put together with $2\frac{1}{4}$ -inch nails principally, so is particularly strong, and not too heavy. For this climate it is certainly a thing of beauty and a joy; and the more experience I have with it the better I like it. With the lid as described above, the dovetailed hive-joint (a joint that the fiercest sun has little effect upon), and the deep-entrance bottom-board, this hive is now *practically perfect*.

I am not sure which has the greater influence in preventing swarming—the improved ventilated gable cover or the deep bottom-board; but that each has a powerful influence is unquestionable. This season I ran over 300 colonies in the home apiary; and while a big proportion of these were utilized in queen-raising, a good number also of the choicest colonies were run for extracted honey and for the production of first-class drones. The season was a magnificent one; and while these colonies were powerfully strong in three-story ten-frame hives, not 5 per cent swarmed during the entire season. What a striking and pleasing contrast is this to my experience of years back, when colonies used to get fairly swarming mad, and a dozen disorderly swarms a day the rule! Instead of chasing after swarms almost the entire day I can now get through twice as much work. Just reflect a while, and calculate what improvements have been made in our methods of management in the past few years, and you can not fail to

come to the conclusion that one man can now manage double the number of colonies that he could some years ago. Hurrah for the Home of the Honey-bees, and your grand corps of workers!

H. L. JONES.

Goodna, Queensland, Aus., Mar. 12.

[Such a letter stands out in pleasant contrast with one or two others whose writers seem to have the impression that The A. I. Root Co. make improvements simply for the sake of doing it, or for diverting trade away from competitors. We never put out an improvement but that we thought it might prove to be a labor-saver to the bee-keeper in the end; and why should we make future generations plod along year after year in the same old ruts when we can see new and better roads to travel over?—ED.]

OLD-STYLE WIDE FRAMES FOR PLAIN SECTIONS.

Why can't I use two cleated separators on my wide frames, and hold them in place by a $\frac{3}{8}$ -inch brad in end cleat (each end), driven into the end-bar of the wide frame? I was just trying the separator you sent me, on one of my frames; two of them will just fill the bill.

E. E. McCoy.

Noble, Ill.

[You can use the fence on the plan you indicate, without any trouble whatever. It is never necessary to discard wide frames to take plain sections.—ED.]



J. F. H., Mass.—Where one intends to use full sheets of foundation I would by all means use wired frames; and if I intended to use only starters I would have wired frames just the same. The wires tend very materially to stiffen the combs. This is an advantage during times of extracting, and of moving bees.

A. P. B., N. J.—For a cure for foul brood, see page 34 of the catalog we are sending you—the last paragraph or two. The honey will be all right if it is boiled for a period of four or five minutes. I would not advise any one trying to get a living off from 150 colonies in average localities. The seasons are too uncertain. Bee-keeping should generally be combined with some other business.

G. P. A., Pa.—We can not understand why your honey should be bitter, unless it is that the bees have been gathering nectar from some weed that may be prevalent in your locality. When this bitter honey comes in, watch the flight of the bees and note the direction they are coming from; then trace them to the source from which they gather the nectar. Having found this, take one of the flowerets and see if you can squeeze a drop of nectar out of it. If this drop tastes bitter, then you can easily determine the source of the bitter honey.



I WISH to call special attention to a valuable article by Chalon Fowls, on the treatment of severe cases of stings. It will pay every one to read it.

A FRIEND, who wishes his name kept private, has sent us \$10 for the Shawneetown sufferer, Mr. Thomas McDonald. The amount has been forwarded.

OUR space is so crowded that, notwithstanding the extra pages, I have been obliged to leave out of this issue a continuation of my visit among the great buckwheat-fields of Schoharie Co., N. Y. I hope to begin the series again in our next issue. In the mean time I gladly give place to some excellent articles touching vital questions of our industry.

In a private letter just received from Mr. W. Z. Hutchinson, in referring to the size of worker-cells, as discussed by Mr. Cowan and myself, he says:

I think that you and Mr. Cowan misunderstood Mr. Cheshire. See page 261 of April 1 GLEANINGS. When Mr. Cheshire says that the *length* of a worker-cell is $\frac{1}{16}$, and a drone cell $\frac{1}{8}$ in length, I think that he means the *depth* of the cell. In one sense that is the *length* of the cell. Perhaps this is not important, but Mr. Cheshire has enough to answer for without this.

I think Mr. Hutchinson is right. I can see how Mr. Cowan might have misunderstood Mr. Cheshire; but, as Mr. H. has explained it, the measurements of both men are correct.

PROF. COOK AND SWEET CLOVER.

My attention has been called to the following paragraph in the *Bee-keepers' Review* for April:

"Sweet clover is an excellent honey-plant. The amount and quality of honey from it is rarely surpassed. I have grown the plant in Michigan for bee-feed for years; but I have never been able to get my cows or horses to eat it. I think the plant is worthless except for bees."—PROF. COOK.

The above is all right, with the exception of the concluding sentence. Now, if Prof. Cook really did write and sign his name to the words, "I think the plant is worthless except for bees," I can not believe he meant to say just that. For years past, not only our bee-journals but most of our agricultural periodicals have been discussing the matter as to why farm stock eat sweet clover with such avidity in some localities, and do not in others. Certainly our good friend Cook is aware of this. If so, how could he ignore such testimony, even if he has never been able to get his own cows or horses to eat it? Another thing, nobody that I know of has ever questioned its great value as a crop when plowed under to enrich poor soils. On the alkali lands of Arizona and Utah, sweet clover is almost the only remedy for soils so strong with alkali that nothing else will grow. After the crop of sweet clover is turned under, al-

most any thing else may be planted. Our experiment stations have made repeated tests in regard to its great value for plowing under, and I have never yet heard of a failure. There is an immense traffic in the seed, north, south, east, and west, and thousands of people are buying the seed, and sowing it, who have nothing to do with bees, and no interest in bee culture. I am sure Prof. Cook will modify his statement, or tell us what he meant to say when he used such a sweeping assertion.—A. I. R.

THIEVES AT OUT-YARDS; HOW THE \$100-REWARD SCHEME IS WORKING.

SOME time in the early part of last winter, you will recall that thieves had been making inroads at our out-yard, and that we had a sign put up, offering \$100 reward for the arrest and conviction of the parties who were stealing honey from our apiary some two miles north of town. The "reward" did its work admirably. I visited the yard a few days ago and found that it had not been touched, although it had been tampered with several times previous to the putting-up of the sign.

This is the way the scheme works: The thing got to be talked of around town, and one or two said they were going after that \$100. The guilty party, whoever he was, must have "smelled a rat" or rather the cat; that is, heard that two men were after him; and if these lines should reach his eyes I wish to notify him that we are still after him, and that the \$100 will be planked down very speedily as soon as he is convicted.

But at Neighbor H.'s out-yard, some two miles south of town, the sign did not have quite the same effect. It was torn down, and his biggest colony was robbed of its honey, and half a dozen others had evidently been "hefted," to get at their weight, for the frames of the loose-spaced kind were all chucked together, the hives evidently having been turned over on one side. Perhaps the thieves at Neighbor H.'s yard thought he would not follow them up as closely as we would have done; but I have asked him to put up another sign, and make a little effort to find out who has been looting his hives. If he makes a general stir in the immediate neighborhood, and says The A. I. Root Co. has \$100 all ready to turn over as soon as the thief is arrested and convicted, that may have the desired effect. But one conviction would do more good than a dozen signs, or "scares," and we are rather aching to turn over the money. We made a general stir in the neighborhood at our out-yard, and the neighbors are on the watch, for the work is usually done at night.

A. I. ROOT ON THE COST OF IMPROVEMENTS.

I BELIEVE, that so far, dear friends, I have had little or nothing to say in regard to this matter. Perhaps some of you might like to know what I think about it. In the first place, nobody is obliged to adopt the plain section unless he chooses. We furnish both kinds, and expect to keep on doing so. I

know it is unfortunate, making so many changes. Here at the Home of the Honey-bees we realize this, perhaps, more than anybody else. It pains me more than I can tell you to see the things I have spent so much money and so many sleepless nights over, thrown away or set aside for something new, and, oftentimes, comparatively untried. Sometimes I am right in thinking we had better stick to the old; but oftener the boys are right in adopting new ideas and putting in improvements. Let me give you an instance. We had a job printing-press that was a model of speed and good work when it was bought. While it was still doing good work, Ernest bought a new one and the old was pushed aside. Perhaps I was not even consulted in the matter, and may be I "grumbled" some. But when the boy who ran the press told me that it was making a saving of enough to pay for itself in *one year*, and that we should really make money to put the old one in the scrap-heap (showing me the figures in regard to its superior and rapid work) I became good-natured all at once, and was ready to apologize for my fault-finding.

There has been considerable said about The A. I. Root Co. and the "almighty dollar." Dear friends, there is not one of us here who would put a burden on our bee-keeping friends for the sake of putting money into our pockets. If we did, how could we consistently say our prayers at night before going to sleep? We recommend changes or suggest changes because we think it will benefit the honey-producer. We may make mistakes, but we certainly are not bad at heart, any of us.

Just now we are so overburdened with business that we have talked about stopping our advertising. Mr. Calvert has told you something of this already. We are *not* greedy for more jobs, nor are we introducing new-fangled notions to get more money; but we do try to look ahead and study the best interests of the honey-producers of the world. Our good friend and old standby Doolittle runs up a lot of figures until he gets to a million of dollars. Now, if this million of dollars should be a bad investment, it would certainly be a sad thing; but suppose, on the other hand, the plain section should be a benefit—at least a little benefit—to each bee-keeper, this would throw the million of dollars into the pockets of the bee-keepers, instead of the way friend D. puts it. We do not know positively how this thing will turn out; but, like new plants and new vegetables, those who want to be up with the times should try these things on a small scale. I do not think the plain section and fence are on a parallel with the new fruits and vegetables, for the former *have* been tried and are being tried in different places, in Doolittle's native State especially. The thing that commended the plain section to my notice was that it is a saving of lumber, and they are cheaper to make, or will be cheaper. Now, do not call me hard names because we do not now offer them cheaper than the regular old style, for it costs something to get up new advertising and new machinery for new things, and at the start they cost more than later on. If reports

are as much in favor of the plain section as I confidently expect them to be now in a very few months, we give you our promise that the plain section will be cheaper another season than the old kind.

There are other things I might explain, by taking time; in fact, I am ready to give our reasons for any thing we do that looks inconsistent, whenever it is worth while to take the space. We certainly are not trying to get ahead of other supply-dealers, for we can not take care of all the orders we have; and at present we are buying hives and sections of almost all other supply-dealers who have any to spare; and in order to fill orders promptly we have bought goods by the carload; and where we could get no concession from retail prices we have turned them over to bee-keepers for exactly what they cost us. We like to see business booming, and we would rather supply our customers promptly, even though we do not make a copper in the transaction, than to see them suffer loss by delay in getting their goods.—A. I. R.

TESTS OF COMB FOUNDATION; MICROMETER MEASUREMENTS OF THE BASES.

R. L. TAYLOR, of Lapeer, Mich., has been continuing his foundation experiments, and in the *Review* for April he gives the results. Deep-cell (or drawn) foundation, thin and extra thin, of two different makes, Given and the Bingham (or no-wall), were given comparative tests in the hive. In making these tests Mr. Taylor had in mind three things; viz., "Which do the bees work most readily? Into which will the bees put the most honey in the same time, under like circumstances? and which will they draw out the thinnest, or most like natural comb?" The various grades of foundation were placed in alternation, with Given sections in a case, as near the center as possible, and all the sections were worked more or less. Mr. Taylor says the preferences of the bees were readily discovered. He found the drawn foundation "was used at once, almost, for storing honey." "It appeared then that it was ahead of the plain foundation. . . . at the end of the honey-flow . . . it weighed only 7 per cent as much as the Given;" and when measured as to thickness of its base it was found to be 37 per cent thicker than that of natural comb. Continuing, he says:

As to the other sorts of foundation, the two Root samples were worked at about equal pace with the Given—the kind called "thin" perhaps a little more rapidly. The Lansing "thin" was behind the Given in that respect; and the Bingham and the Lansing extra thin were behind in a more marked degree. To determine the thinness to which the bees worked these foundations, pieces of the comb made from them were cleaned and sent to Dr. Beal, of the Agricultural College, for measurement.

I will not attempt to give the tabulated result, as many people either do not care to study out an array of figures, or could not properly interpret them if they did. It is enough to state that the base of the extra thin stands 56 ten-thousandths, and drawn or deep-cell very nearly 100 ten-thousandths, or twice as thick; and the Bingham no-wall

about 43 ten-thousandths, and the natural comb about 67 ten-thousandths. It is apparent from *these figures* that the no-wall had the lightest base of any of them, and the drawn the heaviest by considerable. But these tables would have been much more interesting to me if we could have known the relative thicknesses of the bases of the foundation *before* the bees worked on them, as well as after.

We have held all along that the bees would not thin the *bases*, but would thin the *walls*. While this is practically true, some measurements that I have made to-day with a micrometer measuring ten-thousandths of an inch lead me to believe that the bees do thin the bases slightly. From various measurements of different foundations, especially of our own make, I find that the base of ordinary "thin" foundation running 11 feet to the pound, and before the bees had worked it, stands about 71 or 72 ten-thousandths of an inch thick; extra-thin, 50 to 60 ten-thousandths; the 18-feet-to-the-pound article, from 10 to 50 ten-thousandths. Our own measurements of the base of *natural* comb differ from those made by Prof. Beal. A year ago we found that the base of natural comb averaged about 30 ten-thousandths of an inch thick; but I notice that Prof. Beal makes it very nearly 67 ten-thousandths, or more than twice what we found it to be. Accordingly, to-day I went out to the honey-house and selected a number of pieces of natural comb. My measurements ran all the way from 29 to 41 ten-thousandths. A fair average of the last measurements, or those I made to-day, would stand about 36 ten-thousandths. I would, therefore, find the base of natural comb about half as thick as those attributed to Prof. Beal in the *Review*. While I think he made his measurements correctly, I feel morally certain that he got hold of some samples of natural comb that the bees drew out slowly; for I have found it to be true that bees will make comb twice as heavy under some circumstances as they will under others; and I am therefore very confident that 77 ten-thousandths (Beal's measurements) is altogether above the general average.

Mr. Taylor, on the assumption that the base of comb from no-wall foundation was 43 ten-thousandths, and that from natural comb 67 ten-thousandths, concludes that, in point of thickness, the Bingham was thinner than the natural. If I am right as to the average thickness of natural-comb bases the conclusion is hardly correct, unless Prof. Beal were measuring *drone* comb, the base of which I find to be all the way from 60 to 77 ten-thousandths of an inch thick. If that were the case, it would hardly be fair to compare drone with worker comb.

I do not know, but I shall expect that, if we make 18-feet-to-the-pound wall foundation having a base averaging about $\frac{3}{10000}$ of an inch, we shall have results in bases, as between comb from such foundation and that built entirely by the bees, that will defy even the connoisseur or micrometer to detect the difference. I do not wish to go on record as saying that we shall be able to do it, but I *hope* we shall.

In speaking of drawn (deep cell) foundation we freely admit—indeed, we did so last fall—that the septum of such comb, after the bees got through with it in many instances, was a good deal thicker than it was desirable to have it; and the results of Mr. Taylor's experiments are no surprise. Mr. Weed is very confident that his natural-base drawn foundation will have as thin a base as that made by the bees. If it does not, or fails to fill the bill, you may depend upon it that we shall not push it on the public.

Mr. Taylor's table is very interesting, more especially as it goes to show that perhaps foundation-makers have not been as particular as they should have been in getting the *bases* of foundation as thin in the first place as they might be. The "thin" foundation of our make that Prof. Beal measured showed a base, after the bees worked it down, that is about twice as thick as the foundation we are now making of the *same grade*. I do not know that we ever made any that had a base as thick as $\frac{20}{10000}$ of an inch; and I am rather of the opinion that, through some error, Mr. Taylor received a heavy grade. The thickest base I can find in any of our "thin" foundation is $\frac{10}{10000}$; and assuming that the bees do thin it slightly on working, it would probably stand about $\frac{5}{10000}$.

Perhaps, dear reader, you may think it impossible to split hairs as closely as this. We have in our machine-shop a delicate micrometer, made by Brown & Sharp, that will measure off the ten-thousandth part of an inch as easily and accurately as you would measure off eighths of an inch on a foot rule.

It may be interesting to you to know that the paper on which this is printed averages $\frac{30}{10000}$ of an inch thick—the thickness of the base of natural comb, and, like natural comb, the greatest thickness was 32 and the least 27 ten-thousandths.

POWERFUL COLONIES AND THE SWARMING PROBLEM; THE BRITISH FRAME; BIG ENTRANCES.

"BEE CHAT" is the title of a new quarterly edited by Samuel Simmins, Heathfield, Sussex, England. The subscription price is one shilling per annum; but I have no doubt it can be furnished to American readers for 35 cts. The first number is quite "chatty," and full of interesting bee-lore, largely editorial. The editor says he has no intention of competing with his elders, the *British Bee Journal* and the *Bee-keepers' Record*, whose circulation and reputation have been so long established. He would fill a niche all his own.

I was particularly interested, however, in what he says on the subject of powerful colonies as honey-gatherers. He deplores the fact that British bee-keepers have adopted as their standard the British frame, the dimensions of which are $8\frac{1}{2} \times 14$. Then he adds:

There is no single instance where permanent success has been attained on a large scale, where this frame has been adopted. Why? Echo repeats "Why!" The answer is given forth, as the record of repeated failures and unlooked-for disasters, "*Because the Association frame is not adapted to the needs of commercial bee culture.*"

He goes on to cite the fact that the most extensive bee-keeper in the world uses Quinby frames, the size of which is $18\frac{1}{2} \times 11\frac{1}{2}$, or nearly double the dimensions of the British frame. He refers to some reports from bee-keepers in his own country who had used frames about this size, and obtained some large crops of honey. He next quotes from our own Dadant, who, in March 1st GLEANINGS for 1894, reported they had tested, side by side, the American, Langstroth, and Quinby frames; but after a series of years, covering many comparative tests, the Quinby was found to be unquestionably ahead. Dadant is further quoted as saying that he had letters from Switzerland, Belgium, France, and Spain, praising the large Dadant hives, showing by comparison that they were more profitable than smaller hives.

Our own readers know what a leaning I have toward large colonies, and how I have more than once said that, in our experience at least, they would get more honey, both comb and extracted, than the smaller ones; but I can not see that these results are necessarily attributable to a large frame or to a large hive rather than to an equally large hive made up of one or more stories. According to my notion it is not the size of the brood-frame or the size of the hive so much as it is the *numerical strength of the bees themselves*. I do not know positively, but I am very confident that, if Mr. Dadant would try two-story Langstroth hives over against his one-story Quinbys, he would find little if any difference in the amount of honey secured or in their disinclination to swarm; and, what is of prime importance, he could handle his colonies by piece-meal, one story at a time.

As I have said once or twice already in these columns, our "big double-deckers" at the out-yard are the ones that went right on minding their own business, piling in the honey, and not swarming, while the single-story colonies scarcely made a showing. Indeed, I believe that the best solution of the swarming problem, whether at the home or at the out-yard, is big colonies in two-story Langstroth hives. In some cases, at least, it may be advisable to have three stories. If other localities were like our own I would guarantee that there would be very much less swarming, and more money in the pockets of bee-keepers at the end of the season.

THE CONTRACTION FAD.

Some eight or nine years ago, contraction was all the rage. It seemed to be generally agreed that ten-frame Langstroth colonies should be contracted down to six or seven frames. "Why," said the advocates of contraction, "if we give the bees full ten frames below they will pile the surplus all in the brood-nest, and let the supers severely alone. Italians especially are disinclined to go above if they get two or more frames for honey below." I must confess that I was carried away by this sort of talk, and so were hundreds and perhaps thousands of others. But, oh how the bees did swarm, and no wonder! The whole trouble was, the queen did not

have brooding space enough, and the bees were quick to "catch on" to the fact; and the result was, the queen and bees connived together for larger quarters.

THE SELF-HIVER FAD.

Then followed the craze for an automatic hiver. "Why," said the advocates of these new-fangled things, "this staying at home and taking care of swarms, and having a man at each yard, is a ternal nuisance and expense. We have got to have something that will take the place of labor." A few fell "into the swim," and for a time at least felt that the self-hiver, or what subsequently developed the Langdon non-swarming method, was the thing.

Along about this time bee-keepers began to complain that the "honey seasons were not as good as they used to be," and many thought they would be satisfied if they could get on an average 25 to 30 pounds of comb honey per hive. Several Michigan bee-keepers told me they considered they were doing well to get even 10 pounds per colony. Right here do not forget the fact that contraction was used more extensively in Michigan than in any other State.

EXPANSION INSTEAD OF CONTRACTION.

How would it do if we were to begin to talk *expansion* instead of contraction? If we not only talked it but practiced it by working our colonies in two or three stories, we should find, I verily believe, that the little one-story colonies were not "in it."

It would not cost a cent to try three-story colonies. "But," some one says, "I have not any extra supers." Well, take some of those little colonies of yours, and unite them all into one big one; but before doing so, select the best breeding queen out of the lot; for it is necessary to have *good queens*, not much over two years old; and it is important, also, to have wide-mouth entrances, for these big colonies not only must have plenty of room, but a big open entrance.

Our readers all know that some of our most extensive bee-keepers, and most successful ones, are those who use large colonies. Find me a bee-keeper who produces his honey by the tons and by the carload—who strives to keep his queen in one brood-chamber, Langstroth size, and I will point you out a dozen or more who use big colonies, and get the honey—and the *money* too. W. L. Cogshall uses double-deckers. P. H. Elwood and Capt. Hetherington use single-story colonies, but they are on Quinby frames. Julius Hoffman, of Hoffman-frame fame, uses double-deckers, his frames being square, or, rather, on the deep order. J. F. McIntyre uses two and three story colonies, Langstroth size, and he prefers the ten-frame width to the eight, and I might go on and name more.

Now, brethren, come on and let's discuss this question. It is high time we were talking about it, so that we can put it in practice for next season. Let us see whether the trouble with the poor honey crops of late has been *all* due to the season or all to the hive, or, what is probable, to both.



BERMUDA LILIES.

When I said the island of Bermuda is mostly occupied with onions and potatoes on every available rod of soil, I should have mentioned the Bermuda lily-fields. I think it was Gen. Hastings who first introduced the industry, and I am told he made considerable money

see the strings in the engravings, but I think there are strings or marks somewhere. The bulbs are put in about the same as potatoes, and about the same distance apart, and the cultivation is about the same, although there was some talk, when I was there, that there was less trouble from the blight when weeds and every thing else were allowed to grow up along with the lilies, and some people were investigating along that line. I once knew a man who claimed that strawberries would do better among grass and clover. He said the grass and clover would keep the sun from scalding the berries and foliage. I do not be-



PLANTING THE LILY-BULBS.

out of it. That is all right, for the man who inaugurates a new crop for an isolated people like the Bermudans ought to have his reward. For many years the crop was very profitable, and every thing was clear sailing; but, alas! after they got to growing them by the acre a sort of blight set in. Whether this is the same thing as the potato-blight or not, nobody knows; but I believe they have succeeded, or at least partially so, in circumventing the blight by the use of fungicides or special treatment. The bulbs are planted very much as they plant potatoes—see GLEANINGS for March 15. We give you a picture of a field with the ground already prepared, and the men at work putting in the bulbs. I do not

lieve our experiment stations would need to *recommend* testing that sort of treatment.

The picture gives you a glimpse of the way the fields are fenced off. The fences are stone walls, varying in thickness and height. If there is very much stone to be picked off the land, they make the fences thicker and higher. Thus you see the fences are more to get rid of the rocks than to keep out intruders.

As the plants come up they are ordinarily cultivated about like potatoes. They were just beginning to bloom when I left the island in the latter part of February. Probably no description or photo can help the reader to realize how a field of lilies in full bloom looks. Our artist has, however, done pretty well.

Most of you have seen these lilies in green-houses, or perhaps around your homes; but I hardly believe that many of you have seen a plant containing over a hundred of these great trumpet-shaped blossoms. No wonder Bermuda lily-bulbs are a favorite almost all over the wide world. But little use is made of the blossoms in Bermuda. Some attempt has been made, I believe, to ship them to New York city, but the expense is too great, and it is a little difficult to keep them in good order. The crop is grown for the bulbs; and as these vary in price all the way from a few cents up to 25 cents each, it is quite an object to grow the finest and highest-priced bulbs. I did



Thou hast loved righteousness and hated iniquity.—
HEB. 1:9.

My attention was called to the above in our Bible-reading at home this morning. That first chapter of Hebrews struck me as being unlike almost any other chapter in the Bible. The inspired writer speaks with authority in regard to many things that are evidently beyond human comprehension. He touches on



A FIELD OF BERMUDA LILIES IN FULL BLOOM.

not pay so much attention to the lily-bulb business as I did to the potatoes and onions, as the lilies were a little out of my line. If I remember correctly, however, the bulbs are grown something as we grow potato onions and multiplier onions. The largest bulbs, however, I believe, as a rule produce the largest blooms and the greatest number of them. If it were not for the blight, Bermuda could probably supply the world with bulbs. I asked where they originally came from, and was told that they were indigenous to the island, or my informant thought that the Bermudas gave the world this beautiful Bermuda Easter lily.

subjects that the great Creator has evidently placed beyond the range of human intelligence. He gives us a glimpse of the place in creation that Christ the Son of God takes. Then he contrasts him with the angels, of which we really know so little, unless it is that they are messengers, as it were, between the infinite and the finite. In this connection comes that wonderful address to the Son of God in the ninth verse of the first chapter.

There are people in this world, who, may God be praised, as a general thing love righteousness and hate iniquity. Why, come to think of it I believe the greater part of us love righteousness when not stirred up or sway-

ed to the right or to the left by some of these many human impulses and feelings that so often control us. If we could get rid of selfishness we might love righteousness and hate iniquity right along. All around me I catch glimpses every day of beautiful characters. I love to talk with these friends who are helping us, and I love to look into their faces. As a rule they are working faithfully and honestly—that is, when nothing occurs to try them severely.

A good many love righteousness and hate iniquity unless they get angry. Anger makes a man crazy. For the time being he is not himself. Even a little stirring of his feelings may swing him around so for the time being that, without knowing it, he loves iniquity.

During this exceedingly busy season we have had a good many breakdowns—more this past spring than ever before. When such things happen the best men are selected, and each goes to work with brain and muscle to make good the damage, that he and his fellows may go on with their tasks. It is often a serious question as to which is the best way to get the machinery started. One man has one plan, and another a different one. We can not wait long to deliberate; so the head or heads of that department have to decide. The man whose counsel was rejected would have to be a little more than human if he did not feel a little bit pleased to find himself right and the others wrong. Important men often have to go without their meals, and sometimes work nights, even after they have been working all day, in order to get things going. They would have to be more than human if they did not at times get irritable. Somebody thoughtlessly carries off the tool that is wanted most. Sometimes the breakdown reveals the fact that poor worthless tools have been tolerated that hindered work, many times, more than they helped it along; but where there are so many things to be looked after, some of them will be neglected. When a roomful of skilled mechanics are waiting patiently for repairs to be made, you would think a man must be very bad indeed who would willfully prolong the period of waiting; yet I have known men to do this, simply because they were put out by something, or because they got contrary. I do not mean any particular man, but sometimes our best men seemingly, or for the time being, have acted as if they loved iniquity and hated righteousness. I do not know of any thing in this whole wide world that can entirely free us from such departures from the straight and narrow path except a *constant* love toward Christ Jesus, and a bright and *abiding* faith that God's eye is constantly over us, reading our very thoughts.

As I go over this matter, and think of my own wayward and sinful heart, I can only breathe again my little prayer, "Lord, help!" Perhaps I utter only the two words; yet those two words mean to me, "Lord, help me, by the help of thy Spirit, to be *continually* proof against the whisperings and promptings of the evil one; help me to keep down pride; help me to keep down self; help me, O Lord, to be meek and lowly, and easy to be led, even as I

would that these friends of mine should be led in wisdom's ways."

Even in our domestic animals we see this peculiarity—this matter of temper, or this contrary spirit of which I have been speaking. We have in use two big stout horses—Mike and Jack. Both, as a rule, try to do what is wanted, and do it right. Mike has the greater strength; and when he is roused up by something that does not go right, he has not only the strength of a *lion* but something in his make-up that seems like a very *tiger*. When he was a colt he ran away with a cultivator dangling at his heels, and he has never forgotten it, and we have to be a little careful as to who shall handle him, or else his tiger temper may suddenly show itself; and before you know it he will be acting as if he loved iniquity *boiled down*. Jack is meek and gentle. He does the very best he knows how. He will work in the lumber-yard day after day, standing still anywhere he is put; never needs hitching to a post; and, in fact, if the men go away and leave him for a whole hour, and get clear out of sight, he will stand right there faithfully, patiently, and honestly, until they happen to want him again to pull up the car of lumber. Every time I go around that horse, or have occasion to use him, my heart warms toward him. I can pat him on the neck, and say, "Jack, I do not know what others think, but I believe *you* love righteousness and hate iniquity every hour and day of your life."

I realize, when I say this, that some of the men who know Jack pretty well will say that I am mistaken. I once saw a strange man jump into the wagon, and pick up the lines and start to drive him. He backed, threw up his head, and acted so that a bystander said he was ugly, and needed a whipping. I did not know what the matter was, but I felt sure that Jack was not ugly. Finally the man who drives him came around the corner and said, "No, no! don't whip him. His mouth is sore, and you must not pull up on the bits as you do with Mike. Give him a loose rein and you can guide him anywhere you wish, and he will go fast or slow, just as you wish; but do not whip or jerk him."

Now, friends, suppose somebody had whipped that horse for being ugly. Mrs. Root says they would not do it if *she* were around. No doubt thousands of horses have been whipped unmercifully when they no more needed it than did poor Jack at the time I have mentioned. Just think, dear friends, of giving a horse like that to a drunken man to drive!

Such things are sad to contemplate when it is only a domestic animal that is punished and abused when he is just as good as he can be. Not far from where I sit dictating, a boy is at work as busily and honestly and industriously as a boy well can work. He makes his work a study; he tries hard to do every thing right. He asks questions, and gets acquainted with people and things pertaining to his business. His whole mind is on his work. Even if he should see this I do not think he would know whom I mean, for I do not suppose it has occurred to him that his good conduct has been worthy of remark. When he first came here

I was a little prejudiced against him.* His former employer had turned him off, I was told, for bad conduct, and I rather expected to see something about the boy that was not just what it ought to be. But I have not seen it. Now, this boy was dismissed with hard and severe words as I have been told (he never said a word about it himself, mind you); but if he was attending to his work there as industriously as he has since been here, it is a burning shame. I wonder if it is really true with the boys as it is with the horses, that they are sometimes reproached and abused when they are in no way to blame in any way or manner, simply because their employer got angry or contrary, and for the time being loved iniquity rather than righteousness. These boys who are learning how to do things never write for the papers. They never tell *their* side of the story. That is not in print. Sometimes I have wished they did, that we might get a glimpse of things from the boys' standpoint. In my talks with them sometimes I get their confidence sufficiently to catch glimpses of the other side; and I tell you, friends, there *are* two sides to almost every thing. May God give us grace to see things once in a while from a boy's standpoint.

When I was over in Bermuda, on English soil, I caught some glimpses of the great wide world that lies outside of the United States. Let us endeavor to consider the things and circumstances that are outside or on the other side of these narrow lives we are living, and help us that we may unselfishly love righteousness and hate iniquity. Give us grace to say, even when angry, "Look here, old fellow, are you *sure* you love righteousness and hate iniquity at this minute as much as you usually do?" When you are making a trade, and you do not feel quite sure of the man you are trading with, how much would you give to know that *he* loves righteousness and hates iniquity?

In our business of late, with electricity, steam, water, power, and all the late agencies for controlling force, we have been considerably annoyed by meddlesome people; and we have had to put up notices requesting people not to touch certain complicated pieces of apparatus. We have also been obliged to forbid hands from one department going into another except on business. Notwithstanding this, tools are carried off, cranks are turned, and sometimes considerable damage is done. The heads of business talked the matter over, and declared that we would have to commence suspending or expelling those who broke over the rules. I urged that unexpected circumstances would come up; that a good many times we should find there were palliating cir-

cumstances, but I finally consented to the enforcement of some severe penalties. Not long afterward, a pipe was leaking in one of the basements, and damaging goods. I put a tub under the leak, and then went after a boy to carry the water away before the tub could run over. Luckily I met the foreman of one of the rooms, and asked him if he could spare a boy. He said there was a boy in the third story I could have as well as not, and then passed along out of sight. I feared the tub would run over before I could get around. I just then saw another boy carrying sawdust and shavings. I asked him hurriedly if the work he was doing was urgent. He said he guessed not; but to be sure I put it another way. "Will it make any difference if you put down your stuff right here and carry it down to the boiler-room after a while?" He said it would make no difference so far as he knew. So I took the boy down into the basement where nobody could find him and left him carrying water until the plumbers could repair the leak. Well, this little transaction of mine actually caused a shutdown of our whole lower sawroom, stopping all the machinery, and causing a lot of men to be idle for fifteen or twenty minutes. If we had put in force a cast-iron rule, as we were talking about, I should have been suspended or turned off because I stopped a boy in his work, without asking the foreman of that department if the boy could be spared as well as not.

Now, if we are going to love righteousness and hate iniquity we must be very careful about letting our indignation get the better of us. Do not boil over and become vehement at the rickety ways humanity has of managing, until you *know* whether the person meant to be bad, and needed punishment (like poor Jack with his sore mouth), or whether the offender really and deliberately *chose* iniquity. How many, many times I have declared to myself, if I didn't out loud, that I would "not stand this thing a minute longer," and then afterward find out that the neighbor who offended was as honest and innocent of any really bad intention as poor Jack, or myself when I stopped the boy in his work of carrying the sawdust away from a leaky dust-pipe, when stopping the boy caused the pipe to clog and fill up, necessitating another "shutdown." In this case, however, the boy was to blame. He should have *found out* what he was carrying the stuff away for, and what the consequences would be if he deserted his post without giving notice to anybody.

RECENT VICTORIES IN OHIO FOR THE ANTI-SALOON LEAGUE.

I wish every one of our readers who is interested in temperance would send for the April number of the *American Issue*. If you live in Ohio it may encourage you to know of the progress our State is making against the open saloon. Just send a postal card to the Anti-saloon Publishing Co., 38 Wesley Block, Columbus, O.; or if you happen to be writing us, just say you would like a sample copy of the paper, and I will see that it gets to you.

* Perhaps I ought in fairness to say that, since the above was dictated (some days ago), reports have reached my ears not quite in keeping with what I have just said in regard to both the horse and the boy. Alas for humanity and—*horses!* It reminds me of a favorite text that my good old father used to quote, and sometimes he quoted it rather sadly: "He knoweth our frame; he remembereth that we are dust." Yes, even the best of us are reminded, sooner or later, that we are but dust, after all. But we are told just in the verse above the one I have quoted, "Like as a father pitieth his children, so the Lord pitieth them that fear him."



SCABBY POTATOES, ONCE MORE.

E. C. Green, in a late number of the *Rural New-Yorker*, suggests that putting your potatoes in the light and letting them stay several weeks, or a month or two (spread out to the strong light of day, but not to the direct rays of the sun), kills scab fungus as well as toughens the sprouts. He says that last season he planted one bushel of scabby potatoes without having them thus exposed to the light, and the product was badly affected. The rest of the lot were spread out on his barn floor, one deep, and turned occasionally by his little girl so as to let the light strike all sides of the potato. They were spread out as soon as danger from freezing was past, and kept there on the barn-floor till about July 1st. When they were then planted the sprouts were stubby, tough, and dark green. The potatoes were, also, green all over. He cut them to one or two eyes, without breaking off the sprouts, and they started to grow with amazing quickness. He secured a good crop, with not a scabby potato in the lot. While at the experiment station he has also tested potatoes thus treated beside those kept entirely from sprouting in cold storage; but the latter were away behind. As this is substantially the plan pursued for keeping seed potatoes in the island of Jersey, it is not exactly new; but the suggestion that it *cures scab* is new to me, although I have been aware for some time that potatoes planted in July, or even the last of June, were practically free from scab.

This matter is one well worthy of consideration; and if you have some potatoes that you expect to plant a month or two later, I wish you would try the new way mentioned above, and get right about it. If you have not floor space, put some false bottoms in the potato-boxes, half way up, then put a layer of potatoes on the bottom, another on this false bottom, and pile your boxes up one on top of another, where it is as light as it can be without letting the sun strike directly on the potatoes.

COW PEAS AND THEIR CULTURE.

We extract the following sensible article in regard to the matter, from the *Strawberry Cultivist* of April 1:

The cow pea is a decidedly warm-weather plant, requiring about the same temperature as tomato plants or corn. Its chief value is to furnish humus and nitrogen for plant-food. They should be sown in June, in Maryland, in order to mature in September. They are generally sown broadcast about two bushels to the acre. It is a mistake, however, to seed in this manner. They should be sown in drills two and a half or three feet apart, using about one bushel to the acre, care being taken to put the land in good condition. They should be cultivated two or three times between the rows, with cultivator or harrow. If this method is pursued they rarely ever suffer from drought.

But few people have undertaken to grow the crop in drills, and for that reason have not made the success of it that they looked for. The method usually pursued has been to sow them broadcast and to turn them under with plow, thereby cutting off all source of

moisture by capillary attraction; as a result, they get but little growth. We do not think there is anything in the crop as a mulch. If allowed to remain on the land till they mature there is but little left. If cut green they make a most excellent provender. When used for this purpose the crop should be cut when the pods are forming, and treated like clover.

There is a difference of opinion as to the time the crop should be turned under, if it is grown to improve the soil. Many eminent agriculturists maintain that the ammonia is manufactured and stored at the root of the plant, and the process continues so long as there is circulation in the stalk and the leaves continue to breathe the air. The generally accepted theory, however, is that you save all when you plow under the plant as the pod is forming, and in this case you should treat your land with lime.

The use of these crops—cow peas and scarlet clover—gives promise of greatly improving our agricultural lands, and cheapening products. Nothing has succeeded so well as the cow pea. The great advantage this crop has over crimson clover is that it never fails, if seeded and cultivated in drills. The clover crop is uncertain.

The writer suggests sowing in June. Our experiment station has had good success in drilling in about corn-planting time. By all means put them in drills, and give them some cultivation. The saving in seed will pay for the extra trouble. My experience is that the above statements are all correct, and that their value has not in any way been overdrawn.

SWEET-POTATO CULTURE.—HARVESTING THE CROP.

Concluded from last issue.

This is easily done by plowing them out. I wait till the frost has killed the leaves. I never bother cutting the vines after a frost; but I find that, if the potatoes are left in the ground too long, they will not keep so well, and an occasional frosty one spoils the selling qualities. I do not like to wait too long either, on account of rain; the rain does not particularly hurt the keeping qualities, but it causes the potatoes to be muddy, and it is quite a task to wash and prepare them for market. I run between the rows first with a two-horse plow, turning it over on the share so it will cut and pull the vines; then straddle the ridge and turn them out. Follow at once and pull the potatoes out and lay them on the ridge to dry. If a rain should come up before picking up, it will not injure them to leave over night, if there is no indication of frost; but if there is, they must be picked up and covered, then spread out again before storing. Never put them in damp; have them *dry* every time. Handle carefully. I prefer picking and putting into bushel-boxes, and hauling them to the cellar and carefully emptying into bins. Storing the crop is quite different from any other of the farm products, and this has led many to believe it is quite a secret. I prefer a cellar because it is less liable to change in temperature suddenly, and, being under the dwelling, it is handy to reach. If a store-room is above ground it would be well to make it double walled, and pack between with sawdust. Such a room should be kept at a temperature of 45 to 55 degrees; a cellar should be ten degrees higher, and a thermometer kept on the bottom of the cellar.

I make the bins in the cellar a foot from the floor and a foot from the walls, making the bottom and sides tight. On hauling the potatoes from the field they are carefully placed in the bins, and piled up to the ceilings, and the temperature ran up to 90. The potatoes go through a sweating process; and it is necessary to give ventilation for the first two weeks; after that the temperature may be reduced to 60 or 70°, and kept there; but if water should get into the cellar it would be well to run the temperature up to 80°. I have had water standing on my cellar-floor for two winters, and yet the potatoes winter perfectly—even those that happen to fall on the floor.

I prefer a dry cellar; but we can not always control our circumstances, and I mention it here so that one need not be alarmed if water should happen to get into his cellar. However, it would not do for the water to touch the bottom of the bins.

Never ventilate in winter unless you notice moisture gathering on the windows, and never handle the potatoes when going through the sweat.

SELLING THE CROP.

This is not a difficult task, but I deem it best to wait till about the holidays, for two reasons. 1. Quite a

number of people imagine that the "shipped" potatoes are the best; 2. The shipped potatoes have been exposed to so much cold weather that they have become somewhat off flavor; hence it does not require much argument to dispose of the home product.

I went to my grocer after storing and keeping my first crop till January, and said, "Ed, I have some choice sweets I should like to have you handle for me."

"Well, Doc, I should like to help you out; but really there isn't any call for home-grown sweets; in fact, I can't give them away."

"I'll bring you in a bushel, anyway, and let you try them; and if there is no sale for them I will take them back."

In a few days I received a card stating that I could bring in another bushel; and it wasn't long before my entire crop was disposed of.

ONE OF MY FAILURES.

Being very busy during one fall, and having heard so many writers claim that frost does not hurt sweet potatoes if stored and sweat out, I concluded to give it a trial. The potatoes were not dug till quite late; the result was, they did not keep well, and a frosty one now and then ruined them for eating.

Shipping potatoes when I began growing plants, I ordered five barrels from Cincinnati, and lost some two barrels in getting them a distance of thirty miles. Last spring I sent potatoes to Iowa that were en route one month, with a loss of only six or eight in a barrel. Before shipping, run the temperature up to eighty or ninety degrees, and one will find that they will carry safely.

VARIETIES.

There are perhaps some seventy varieties of sweet potatoes, but only five or six are cultivated in the North.

1. The *Yellow Jersey* stands at the head.
2. The *Red Jersey*.
3. The *yams*, which are cultivated principally for earliness.

4. The *General Grant* (or *Gold Coin*), that is known by its large round leaf and short vine. While it is a good potato, though in no way superior to the *Yellow Jersey*, it has the fault of not setting its potatoes close to the plant; and for this reason it can never be plowed out; and the color, white, does not make it a good seller.

5. The *Gold Coin Prolific* will never produce enough potatoes to make it a profitable variety, although its vine grows erect, something like the *Irish potato*.

Running after the new vineless potatoes has cost me something like twenty-five dollars. This new craze in sweet potatoes reminds me of the patent-medicine advertisement. Last spring I ordered a peck of "Chinese Thirty Days" from a well-known Eastern firm, paying \$2.00 for it; and when they arrived I found it to be the *General Grant*. I had already more of the potatoes than I knew what to do with in my cellar at the time.

The same thing occurred in ordering "McKinley's Choice" from an Indiana man. I bought these newer varieties, expecting them to be better than our common ones, and thinking I should be repaid in selling the plants; but after testing them I hadn't the heart to deceive my neighbors, and did not try to push their sale. It was claimed for the new varieties that they were easily cultivated; but I find the labor of digging them costs more than the extra labor of cultivating the red and yellow. They can not be plowed out without injuring, as there are so many of the tubers.

In conclusion let me suggest that you cautiously try a few new potatoes, remembering that this is a gullible age; and if you get duped at some one's scheming it is perhaps a consolation to know that others are in the "same boat."

J. Q. MULDERS.

Lebanon, Ohio.

BERMUDA GRASS—A CAUTION.

On p. 309 Mrs. Harrison calls attention to Bermuda grass for lawns, and the senior editor strongly recommends it. Will you kindly let me sound a few words of warning? There are two species of this grass in Florida, known as Bermuda grass and St. Lucie grass. This last was so named because attention was first called to its great value by some one here on the St. Lucie River—I think by Mr. John McNulty, an employee of Peter Henderson's. Bermuda grass propagates itself by its roots under ground, and, because of that, is exceedingly difficult to be gotten rid of or kept from spreading where it is not wanted. St. Lucie grass increases by runners on top of the ground, something like strawberries, only more prolific, and is, therefore, much easier kept in subjection. It would

take a great inducement indeed for me to allow Bermuda grass to get a start on my place.

The differences in appearance and value of the two grasses are almost imperceptible; but for the reason I have given, the St. Lucie grass is being used almost exclusively in this part of the State for lawns, etc.

Stuart, Fla., Apr. 23.

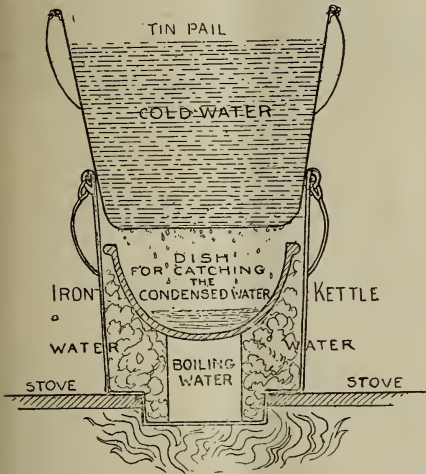
O. O. POPPLETON.



PURE WATER.

During my childhood, until the age of about twelve, I lived near the soft-water springs of Summit Co., Ohio; and I can not remember that I was ever troubled about water to drink unless away from home. I remember that, even when quite small, I made up a face when asked to drink hard water from certain wells. About the time I have mentioned, father moved to our present locality, and on the old farm there was a well of very hard lime water. They all told me that, when I got used to it, it would agree with me, and that I would like it as well as the old spring water. But I never got used to it. As we had no cistern at that early time I used to set tin pans out in the rain, and, by using all the utensils mother could furnish, I used to get a crockful of pure soft water. This crock I kept covered up and shaded on the north side of the house, as we had no cellar then. Oh how delicious that pure soft water was to me after trying to drink the hard water! Some of the harvest hands laughed at me; and when somebody tipped over my crock with its precious contents I was ready to wage war, even if my puny arms were only pipstems compared with those of other boys of my age. Well, from that time to this I have loved soft water. It now occurs to me that I have mentioned something about it once or twice before. What brings the matter to mind just now is that I have for the past two weeks been enjoying, immensely, *distilled* hot water to drink; and it is more delicious and satisfying than any water I have ever found before. It comes from an apparatus called the "Sanitary still," made by the Cuprigraph Co., 108 North Green St., Chicago. The apparatus cost, heavily nickel-plated, \$13. It is set right on top of an ordinary cook-stove, and with almost no attention it furnishes a gallon or more of distilled water a day. The manufacturers say it will produce from three to five gallons; but we have not made it do so much. There has been a good deal of talk about distilled water in our journal before, and I have at different times used it from the steam-pipes in our factory. But the steam from an engine can not be condensed so as to produce nice drinking-water in any way that I know of. The trouble is, the oil used in the cylinder of the engine gets into the steam, and makes the water more or less greasy. You can satisfy yourself of this by the amount of grease found around the exhaust-pipe of any steam-engine. Another thing, I had supposed that rain water caught on a slate roof, and stored in a good clean

cistern, was so much like distilled water that few people would notice the difference. This is a mistake. If you taste pure distilled water, and then the best cistern water, you will notice there is a vast difference. Rain water caught direct from the clouds, in clean tin pans or other dishes that will give no taste, is very



HOME-MADE APPARATUS FOR PRODUCING DISTILLED WATER ON A COMMON STOVE.

nearly as good as distilled water. Freshly fallen snow, before it has had time to get full of particles of dust and dirt, furnishes, when melted, perhaps the nearest approach to distilled water of any thing. But rain water, especially in hot weather, very soon becomes more or less contaminated. Distilled water is so different that many people do not like it at first, saying it is too flat and insipid; but when you get used to it, it is the most delicious beverage the world ever produced; and the principal thing that commends it to me is the pure sweetness of the mouth and breath when one drinks only distilled water. I am satisfied it has a very considerable effect in digestion—at least where there is any difficulty or tendency toward indigestion. Pure water is to the physical man what just, pure, and honest truth is to the moral and spiritual man. You can not really appreciate either to its fullest extent until you have had some experience with the spurious article.

Do you say, "Bro. Root, it may be an easy matter for you to pay \$13 for a Sanitary still, just for the privilege of having distilled water every day, all you want to drink. Is there no cheaper way to get it?"?

Yes, my friends, there is a cheaper way. If the wash-boiler you use every day has a raised cover, you can produce distilled water very cheaply. Put the boiler on the stove, with just a little water in it. Put the raised cover on upside down. When the water in the boiler begins to boil, the steam will settle on the inside of the cover, and drop off at the apex, which is, in this case, turned downward. Fix a little basin to catch the water as it trickles down, and you will have distilled

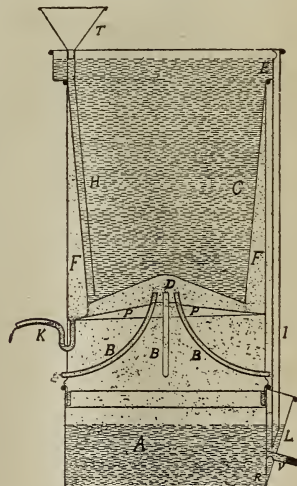
water. But you will notice that the cover will pretty soon become very hot. Pour some cold water into it every little while, and, when this cold water has become hot, put it down in the bottom, to be boiled, and put some more cold water in its place. If you add a few pieces of ice to the water on top, the steam water will condense on the under side of the cover much faster. In our issue for Oct. 15, 1896, we gave a cut of a home-made apparatus, and I regard the matter as of so much importance that I hereby reproduce it.

DIRECTIONS FOR USE.

The apparatus consists of an iron kettle, not pot, with sides straight at a certain angle; a seamless tin pail, a little more flaring, of such size that it will sit about 3 inches in the kettle, and fit snug all around, so the steam does not escape. I next found a round earthen dish, with scalloped edges, a little smaller than the middle of the kettle, which rests on a tin can. We put water into the kettle up to the bottom of the dish, which holds more than the dish will hold (when it has steamed up against the pail with cold water in it). Into this the water drops from the condensed steam.

You will notice the above is a modification of the boiler and cover. Now, the apparatus furnished by the Cuprigraph Co. is only a further modification of the above—of course, very much more perfect, and withal exceedingly ingenious.

The water is boiled in A, as before. It will not do to let A become empty, therefore there is an opening at I, so you can see just how low the water is in the boiler. The chamber C holds the cold water; and as it collects like dew on the outside of C, it runs down and drops from the lower corners into the outside receptacle F. It is finally discharged at K.



SANITARY STILL, OR CUPRIGRAPH.

into a glass fruit-jar, or any other suitable vessel. C is to be kept constantly full of cold water. You fill it by pouring water in at the tunnel T. This cold water goes down to the bottom through the pipe H. The cold water will always stay at the bottom because it is heavier. If you pour in enough water at T the hot water will overflow at E into the tube I, and this replenishes A. The tubes B B B are air-tubes to furnish air to aerate the dis-

tilled water. About once a week the bottom boiler A should be emptied out and cleansed. Now, it makes very little difference what kind of water you put into this apparatus. You may dip it out of a muddy pool, or it may contain lime, saleratus, or any amount of alkali, but the distilled water at K will be just the same; but, of course, more sediment will collect at A if the water is very impure. Mrs. Root wanted to know if it would be just the same if I were to put a solution of arsenic into the machine. "Why, certainly," said I; "the water would be just as good to drink." But she said she would rather let somebody else try the experiment. Perhaps I should add that the cheapest Sanitary still, made of polished copper, is only \$10. If I am correct, pure distilled water has no chemical effect on copper; but, to make assurance doubly sure, the copper is lined with pure block tin inside, so the apparatus should last a lifetime. The Cuprigraph people are offering a nice little book describing the apparatus, telling of the different people who are using their still, etc., all of which will be sent free to all applying.

I feel so sure that a great many people like myself would be greatly benefited by absolutely pure water that I thought I would give the above amount of space to the matter. A great deal of money is paid out for water from various mineral springs; but somebody has said, and I think he is right, that "the best mineral water is water containing no mineral at all." If you have been troubled with a bad taste in your mouth, and with a longing for water or something to drink that would leave no unpleasant "twang," try distilled water for three or four days, and see if you do not agree with me that it is the kind of water God intended we should drink. I believe our medical men agree that a host of diseases, especially those pertaining to the kidneys, are the result of gradual accumulation of minerals or other impurities that come through the water we drink. Typhoid and other fevers, almost all of them, are contracted through organisms contained in water improperly used for drinking-purposes. Occasionally we find soft-water springs coming from pure sand rock where the water is almost as pure as distilled water. If you have such a spring, thank God for it. If, however, you are not satisfied with the water you are obliged to drink, rig up a home-made apparatus such as I have described above, and try it. If pure water, pure air, and pure and wholesome food do not restore you, then perhaps you are excusable in applying to a doctor; but I would try the other things first.

ARNICA, AND LIKE REMEDIES FOR SPRAINS.

In paying a bill at a drugstore a year or so ago I found an item of something like a dollar for arnica. My teamster bought it for a sprain on the leg of one of our horses. For some years I have been trying to discover whether arnica is really any better than or as good as simply hot water. T. B. Terry recently sprained his ankle while traveling. He comments in regard to it in a recent number of the *Practical Farmer* as follows:

Friends would come in and ask why I did not put on this and that. One day I asked our family physician, in whom I had confidence, if there wasn't something that could be put on that would hasten the healing a little, and he replied, "No, I am sorry to say there is nothing known to science that will do any good. We must wait for Nature, and do nothing to hinder her." This reminds me of what Dr. A. W. Biting told us at Indiana institutes about taking care of the wounds of an animal. He said, "Wash clean in sterilized water, then bind up in new clean cheese-capping. To sterilize the water, boil it and allow it to cool before using. Use no old rags nor ordinary water. Nothing you can put on will do any good, such as binding on pork, fish-worms, etc." How often we doctor ourselves or our stock, and we get well, and we give the credit to our work, while Nature did all the healing, and very likely we hindered her some!

Here is something else that I clipped from a paper. It may have a bearing on this matter of buying medicines:

Mrs. J. C. Ayer, widow of the noted patent medicine man, died in Paris last week. She had lived in Paris ten years, "the richest woman in the world." Her wealth was estimated at thirty millions of dollars, and her annual income was two millions. It all came from poor sick mortals. She loved display, and her establishment was the grandest in Paris.

Humbugs and Swindles.

Mr. A. I. Root:—I send you by this mail a little paper published in your State by a couple of men named Bain. I wonder if one of these is our old friend Bain. I consider the thing a batch of lies, and would like your opinion of it in GLEANINGS.

Napton, Mo.

JAS. T. SHACKELFORD, P. M.

The paper published at New Concord, O., is called the *Money Maker*, and its principal business seems to be to puff egg-preserved, fruit-preserved, hair-restoratives, and other things to make money. A great part of the articles published in the paper are from people who tell how they made "lots of money" buying these new-fangled preparations of the editors. Here is a sample of the way they start out:

A GIRL'S GRIT.

EDITORS MONEY MAKER:—I want to thank you for the article you published last month about preserving fruit by the cold process. I was out of work, and did not know what in the world to do; but after reading your paper I borrowed a dollar, and sent for a sample of fruit, and 15 directions for preserving it, and started out to sell it, it being my first attempt to sell any thing. I gave a taste of the fruit at every house I went to, and I did not find a person but said it was the nicest fruit he had ever tasted. I sold four recipes in the forenoon, seven in the afternoon, and the other four in an hour that evening, and got a dollar each for them; and to every one who bought a recipe, I sold a package of salyx, with which to put the fruit up, and made 50 cents on each package, so on that day's work I made \$21 above my expenses. This may not seem much to those who are used to having lots of money. I then sent for 25 more directions, and have just sold the last one of them, and a package of salyx with each one; so I made \$30 clear money on that lot in less than two days. I am going to push right along at this till I get money enough to start up in the poultry business nicely. All the money I can make this spring I am going to invest in eggs, and preserve them by the algetta method. I thank you again for your very valuable paper, and inclose you \$2 for it and a package of per-algetta. MISS MARY A. BURNS.

Of course, they do not tell where Miss Mary Burns lives, nor any of the rest of the contributors, nor the address of those who contribute similar articles. Preserving fruit by the cold process is such an old exposed humbug that I did not suppose anybody could be duped by it now. Look out for this sort of advertising, no matter in what paper you see it.